Cole County/Jefferson City Missouri Natural Hazard Mitigation Plan

July 1, 2011



Prepared by:

Mid-Missouri Regional Planning Commission 206 East Broadway P.O. Box 140 Ashland, MO 65010 Phone: (573) 657-9779

Fax: (573) 657-2829

Plan updates available online at .mmrpc.org







Table of Contents

| Prerequisites | 2 |
|--|----------|
| Section 1: Introduction and Planning Process | |
| 1.1 Purpose 1.2 Background | 3 4 |
| 1.3 History of the Cole County Hazard Mitigation Plan | 4 |
| 1.4 Participating Jurisdictions | 6 |
| 1.5 The Update Process | 8 |
| Section 2: Planning Area Profile and Capabilities | |
| 2.1 Geography and Ecology | 18 |
| 2.2 Climate | 23 |
| 2.3 History | 25 |
| 2.4 Natural Hazard History | 26 |
| 2.5 Demographics2.6 Education | 28 32 |
| 2.7 Economy, Industry, and Employment | 34 |
| 2.8 Transportation and Commuting Patterns | 37 |
| 2.9 Inventory of Assets and Capabilities | 41 |
| Cole County | 42 |
| Jefferson City | 50 |
| Lohman | 51 |
| Russellville | 52 |
| St. Martins | 54 |
| St. Thomas | 55 |
| Taos | 56 |
| Wardsville | 57 |
| School Districts | 58 |
| Lincoln University | 58 |
| Fire Protection Districts | 61 |
| Water Districts | 62 |
| Policy, Planning, and Program Capabilities | 63 |
| Legal Authority and Political Willpower | 66 |
| Community and Regional Partnerships | 67 |
| Non-Governmental and Volunteer Organizations | 67 |
| Media | 68 |

| Section 3: Risk Assessment | |
|---|-----|
| Methodology | 70 |
| Identification of Hazards | 70 |
| Profiling Hazards | 71 |
| Inventory of Assets | 71 |
| Vulnerability Assessment | 72 |
| 3.1 Dam Failure | 85 |
| 3.2 Drought | 100 |
| 3.3 Earthquake | 106 |
| 3.4 Extreme Heat | 114 |
| 3.5 Flood | 120 |
| National Flood Insurance Program (NFIP) | 131 |
| NFIP Repetitive Losses Properties | 148 |
| 3.6 Land Subsidence/Sinkhole | 149 |
| 3.7 Levee Failure | 154 |
| 3.8 Severe Winter Weather | 163 |
| 3.9 Wildfire | 169 |
| 3.10 Windstorm, Tornado, and Hailstorm | 177 |
| Windstorm | 178 |
| Tornado | 188 |
| Hailstorm | 188 |

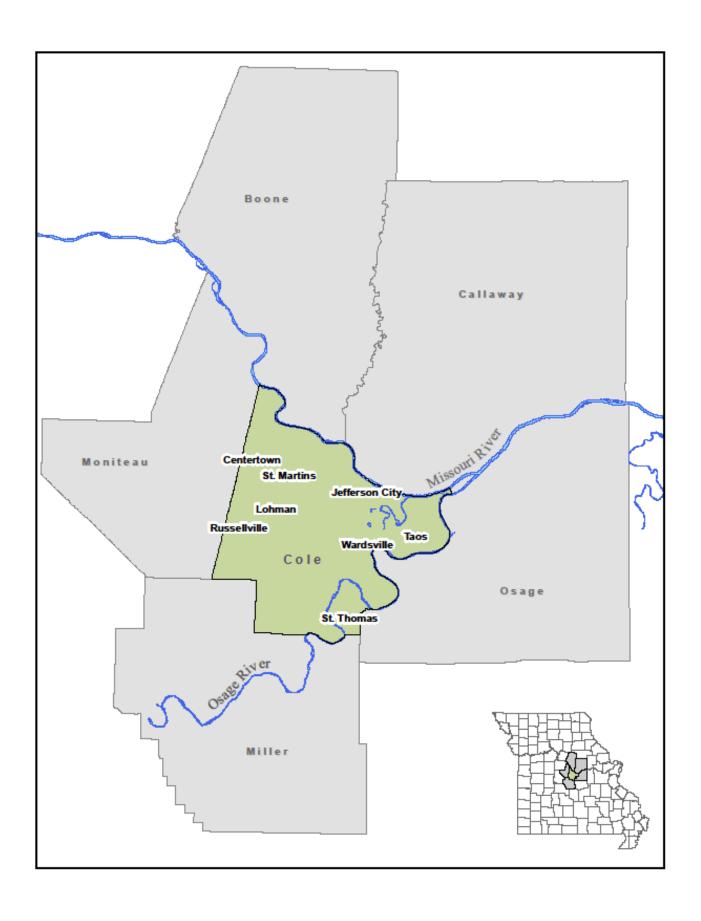
| Section 4: Mitigation Strategy | |
|--|------------|
| 4.1 Hazard Mitigation Goals | 193 |
| 4.2 Update of Mitigation Actions | 194 |
| 4.3 Mitigation Goals, Objectives, and Actions | 205 |
| Mitigation Actions by Hazard Addressed | 210 |
| Dam Failure | 210 |
| Drought | 210 |
| Earthquake | 211 |
| Extreme Heat | 212 |
| Flood | 212 |
| Land Subsidence/Sinkhole | 214 214 |
| Levee Failure | 214 |
| Severe Winter Weather Wildfire | 216 |
| Windstorm | 217 |
| Hailstorm | 218 |
| Tornado | 219 |
| Mitigation Actions by Hazard and Jurisdiction | 220 |
| Mitigation Actions Addressing Compliance with NFIP Requirements | 229 |
| 4.4 Prioritization, Implementation, and Administration of Mitigation Actions | 231 |
| Prioritization of Actions using STAPLEE and Benefit/Cost Reviews | 232 |
| · · · · · · · · · · · · · · · · · · · | 237 |
| Implementation and Administration in Participating Jurisdictions Cole County Government | 238 |
| Jefferson City | 248 |
| Lohman | 258 |
| Russellville | 264 |
| St. Martins | 272 |
| St. Thomas | 280 |
| Taos | 286 |
| Wardsville | 293 |
| Cole County R-V School District | 303 |
| Jefferson City School District | 305 |
| Lincoln University | 308 |
| 4.5 Funding Sources | 308 |
| | |
| | |
| Continue E. Dian Maintenance Draces | |
| Section 5: Plan Maintenance Process | 040 |
| 5.1 Plan Monitoring and Evaluation | 313 |
| 5.2 Plan Updating | 315 |
| 5.3 Integration of Hazard Mitigation into Other Planning Mechanisms | 317 |
| 5.4 Public Participation in Plan Maintenance | 320 |

| Section 6: | Maps | |
|-------------|-------------------------------------|-----|
| Cole County | Key Infrastructure | 322 |
| Cole County | Key Infrastructure - Jefferson City | 323 |
| Cole County | Schools | 324 |
| Cole County | Fire Stations | 325 |
| Cole County | Population Density | 326 |
| Cole County | Land Use | 327 |
| Cole County | Hospitals and Nursing Homes | 328 |
| Cole County | Transportation | 329 |
| Cole County | Warning Sirens | 330 |
| | | |

Appendices

| Appendix A A | Adoption | Resolutions |
|--------------|----------|-------------|
|--------------|----------|-------------|

- Appendix B St. Thomas Letter of Representation
- Appendix C Meeting Agendas
- Appendix D Sign-in Sheets from Meetings
- Appendix E Meeting Announcements
- Appendix F Value Statements Jefferson City and Cole County
- Appendix G Vulnerability Assessment Chart
- Appendix H Dam Inventory
- Appendix I Flood Buyouts
- Appendix J Levee Consolidation Resolution for Cedar City and Capital View
 - Drainage Districts 2009
- Appendix K Priority Scale Development
- Appendix L Jurisdiction Specific Information for Centertown



"Across the United States, natural, manmade, and other disasters have led to increasing numbers of deaths, injuries, property damages, and disruptions of business and government services. This can take an immense toll on people, businesses and government, especially in these challenging economic times. The time, money and effort to respond to and recover from disasters divert public resources and attention from other important programs.

Hazard mitigation is defined by the Federal Emergency Management Agency (FEMA) as any action taken to eliminate or reduce the long-term risk to human life and property from hazards and their effects. This is crucial to the residents, businesses, and governments of Missouri.

Hazard Mitigation is the only phase of emergency management specifically dedicated to breaking the cycle of damage, reconstruction, and repeated damage."

- Missouri State Hazard Mitigation Plan, July 2010

Executive Summary

The Cole County/Jefferson City Natural Hazard Mitigation Plan is a multi-jurisdictional plan prepared and written with the participation of Cole County government and the following Cole County communities, school districts, and university: Centertown, Jefferson City, Lohman, Russellville, St. Martins, St. Thomas, Taos, Wardsville, Cole County R-V School District, Jefferson City Public School District, and Lincoln University.

All of these jurisdictions, with the exception of Centertown, fulfilled the requirements to be considered participating jurisdictions in the plan.

The plan profiles twelve natural hazards (dam failure, drought, earthquake, extreme heat, flood, levee failure, land subsidence/sinkhole, severe winter weather, wildfire, windstorm, tornado, and hailstorm) which threaten lives and property in some, or all, of the participating jurisdictions. All hazards were evaluated with regard to previous occurrence, probability and severity of future occurrence, existing mitigation strategies, and the potential impact on each jurisdiction.

An overall mitigation strategy was developed through the consideration of potential threats, resources, and willpower available to mitigate their effects. The goals of this mitigation strategy are:

- Goal 1: Mitigation Planning Mitigate effects of future natural hazards throughout the County through public and private cooperation.
- Goal 2: Mitigation Policy Develop policies that limit the impact of natural hazards on lives and property.
- Goal 3: Mitigation Programs Implement cost effective and feasible mitigation programs to protect lives and property of Cole County jurisdictions.
- Goal 4: Public Awareness Increase public awareness of natural hazards in order to make the public a greater partner in hazard mitigation planning.
- Goal 5: Future Development Promote hazard-proof development in the jurisdictions of Cole County.

Specific mitigation actions have been developed and prioritized to further the goals of the overall mitigation strategy in each participating jurisdiction.

The Cole County/Jefferson City Natural Hazard Mitigation Plan will be formally adopted by each of the participating jurisdictions after a final draft is approved by FEMA. Participation in, and formal adoption of, the plan qualifies a jurisdiction to apply for Federal Emergency Management Agency (FEMA) pre-disaster mitigation grants and the mitigation portion of post-disaster mitigation grants.

The plan will be updated in five years, as required by FEMA. It will be evaluated and maintained on an annual basis prior to this update.

Prerequisites

Multi-Jurisdictional Plan Adoption

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

Examples of adoption resolutions for the participating jurisdictions are included in Appendix A.

Section 1: Introduction and Planning Process

1.1 Purpose

The Cole County/Jefferson City Natural Hazard Mitigation Plan is designed as a resource for county and municipal governments, residents, developers, organizations, and others interested in controlling the potentially disastrous effects of natural hazards in Cole County. Each year natural hazards take a great toll in the United States. Cole County is not immune; it is subject to numerous natural hazards which can threaten life and property. A well-conceived mitigation strategy, developed through an inclusive and thoughtful planning process, is an important step in protecting citizens and reducing loss.

The Federal Emergency Management Agency (FEMA) defines mitigation as "sustained action taken to reduce or eliminate long-term risk to people and their property from hazards and their effects." A 2006 study by the Institute for Building Science found that \$4 was saved in post-disaster response and recovery for every \$1 spent on pre-disaster mitigation.

The Cole County/Jefferson City Natural Hazard Mitigation Plan was developed by the communities and citizens of Cole County, their elected officials and public servants. The process was carried out by identifying the natural hazards that impact Cole County and its residents, assessing the probability of occurrence and severity posed by each natural hazard, identifying the most vulnerable areas, and evaluating all possible mitigation actions which might be effective. Potential mitigation actions were assessed and prioritized based on the perceived need, probable outcome, potential for being executed, and benefit related to cost.

The plan was developed in accordance with FEMA's Mitigation Planning regulations under Code of Federal Regulations (CFR), Title 44, Part 201.6, *Local Mitigation Plans*. Relevant requirements from CFR §201.6 are highlighted throughout the plan.

Multiple jurisdictions within Cole County participated in the development of this plan. Having a current and approved hazard mitigation plan makes each of the participating jurisdictions eligible to apply for FEMA pre-disaster mitigation grants and the mitigation portion of post-disaster mitigation grants.

1.2 Background

Responding to and mitigating for natural disasters has been a subject of increasing focus for the federal government in the past decades.

The process for declaring Presidential Disasters was established with the passage of the Disaster Relief Act of 1974. In 1988, the Robert T. Stafford Disaster Relief and Emergency Assistance Act created the organizational framework through which funds and assistance would be provided after a Presidential Disaster Declaration; FEMA was designated to coordinate the relief efforts.

In 1993, FEMA created the Mitigation Directorate to oversee hazard mitigation. This established mitigation as the cornerstone of emergency management.

The Disaster Mitigation Act of 2000 further defined activities related to disaster relief and mitigation; one of its provisions encourages development of hazard mitigation measures, including land use and construction regulations.

1.3 History of the Cole County/Jefferson City Natural Hazard Mitigation Plan

In November 2003, a "current and approved" hazard mitigation plan became a FEMA eligibility requirement for local jurisdictions applying for pre-disaster mitigation grants and the mitigation portion of post-disaster grant funds.

Due to this change in FEMA grant requirements, the Missouri State Emergency Management Agency (SEMA) contracted with the Missouri Council of Governments for the Regional Planning Commissions to direct hazard mitigation planning for interested counties within their respective regions. Cole County contracted with the Mid-Missouri Regional Planning Commission (Mid-MO RPC), of which they are a member, to facilitate the development of a natural hazard mitigation plan for the county.

A Project Steering Committee was formed to oversee the planning and writing of the original Jefferson City - Cole County Natural Hazard Mitigation Plan in 2005. The plan was approved by FEMA on January 31, 2006.

Maintenance of Cole County/Jefferson City Natural Hazard Mitigation Plan 2010 - 2011

The Cole County/Jefferson City Natural Hazard Mitigation Plan 2010-2011 was written to be a working document to guide participating jurisdictions in the county in the work of mitigating potential natural hazards. The maintenance plan in the original document designated the responsibility for monitoring and evaluating the progress of the mitigation strategies in the plan to the County Commission, Jefferson City Council, and the EMC (Emergency Management Coordinator).

The *Cole County/City of Jefferson Emergency Operations Plan* was updated in 2008 and reflects the hazard mitigation strategies in the original plan.

A number of the mitigation actions decided upon in the original plan have been implemented or completed at this time. These completed mitigation actions are included in Figure 4.2 in Section 4 of this plan.

The plan has been publicly available on the website of the Mid-MO RPC (www.mmrpc.org) since it was originally approved and adopted. During the ensuing years, the Mid-MO RPC has kept the jurisdictions informed of mitigation grant opportunities through letters, the RPC's enewsletter, and announcements at meetings of the RPC.

This plan update lays out a clearly defined maintenance process with a timetable for review and concrete tools to be employed in the review. This process is found in Section 5 of the plan.

1.4 Participating Jurisdictions

| Requirement | Multi-jurisdictional plansmay be accepted, as appropriate, as long as each jurisdiction has participated in the processStatewide plans |
|---------------|--|
| §201.6(a)(3): | will not be accepted as multi-jurisdictional plans. |

The Cole County/Jefferson City Natural Hazard Mitigation Plan is a multi-jurisdictional plan. Planners from the Mid-MO RPC (Plan Author) developed the following criteria for a jurisdiction to qualify as a participating jurisdiction:

- 1. Completion of a survey regarding capabilities, vulnerable assets, and future development within the jurisdiction
- 2. Representation in the planning process via a representative on the technical steering committee
- 3. Review of a draft of the plan and provision of feedback, if warranted
- 4. Review of the mitigation actions suggested by the Technical Steering Committee for the jurisdiction, including development of plans for implementation and administration of the mitigation actions within the jurisdiction
- 5. Formal adoption of the plan

The participating jurisdictions in the original plan (2005) and those participating in the updated plan (2010) are shown in Figure 1.4.1.

The chart also tracks the completion of the criteria for inclusion as a participating jurisdiction in the plan. The column on the far right of the chart in Figure 1.1 ("2010 Participating Jurisdictions") indicates those jurisdictions which have completed the above requirements and are requesting approval of the plan prior to formal adoption.

The Village of Centertown, while a participant in the initial steps of the planning process, voted unanimously to opt out of the Cole County/Jefferson City Natural Hazard Mitigation Plan. They did not review and return their mitigation actions. All information pertaining to Centertown has been removed from the body of the plan and placed in Appendix L.

Of the five public school districts within Cole County, three opted not to participate in the planning process. Further information about the school districts can be found in Section 1.5 under Educator Meetings.

The term "Planning Area" is used in the plan to indicate, as a whole, the participating jurisdictions in the plan.

| Figure 1.4.1 | | | | | | _ | - |
|------------------------------------|---------------------------------------|---|---------------------|--------------------|-----------------------|--------------------|---------------------------------------|
| | | Multi-jurisdic | tional Pla | n Particip | oants | | |
| | | 2010 | Participat | ing Jurisd | iction Criteria | 3 | _ |
| Jurisdiction | 2005 Participating Jurisdiction | Designated representative in planning process | Survey Completed | Review of Draft | Mitigation Actions | Formal Adoption | 2010 Participating Jurisdiction |
| Cole County | X | X | X | X | X | | |
| Centertown | X | X | X | | | | |
| Jefferson City | X | X | X | X | X | | |
| Lohman | X | X | X | X | X | | |
| Russellville | X | X | X | X | X | | |
| St. Martins | X | X | X | X | X | | |
| St. Thomas | X | X | X | X | X | | |
| Taos | X | X | X | X | X | | |
| Wardsville | X | X | X | X | X | | |
| Cole County R-V School District | | X | X | X | X | | |
| Jefferson City School District | | X | X | X | X | | |
| Lincoln University | X | X | X | X | X | | |

1.5 The Update Process

| Requirement | [The plan shall document] the planning process used to develop the |
|---------------|---|
| §201.6(c)(1): | plan, including how it was prepared, who was involved in the process, |
| §201.0(c)(1): | and how the public was involved. |

The Cole County/Jefferson City Natural Hazard Mitigation Plan must be updated and adopted by the participating jurisdictions every five years to be considered current. The update was directed by planners from Mid-MO RPC (Plan Author) as specified in a Memorandum of Agreement (MOA) between Cole County, the Mid-MO RPC, and the Missouri State Emergency Management Agency (SEMA).

The general planning process along with significant dates was as follows:

- 1. Initial update of technical data in charts, graphs, and maps (e.g. storm history events, demographics, land use, etc.) by Mid-MO RPC staff (March-April 2010)
- 2. Formation of a Technical Steering Committee to prepare preliminary draft of the update and provide input throughout the update process (May 2010)
- 3. Meetings with Technical Steering Committee and Special Districts to prepare update, including decisions on/prioritization of mitigation actions (June-August 2010)
- 4. Survey to officials of potentially participating jurisdictions regarding risks/vulnerabilities in the jurisdictions (June 2010)
- 5. Incorporation of participating jurisdiction survey information into update draft (June-August 2010)
- 6. First Public Meeting for presentation of update draft to officials of participating jurisdictions, neighboring jurisdictions, the public, interested agencies, businesses, and non-profits (August 24, 2010)
- 7. Initial SEMA review of preliminary draft (due August 31, 2010)
- 8. Feedback from participating jurisdictions on mitigation actions which they intend to pursue in their jurisdictions and their plans for implementation/administration (September-October 2010)
- 9. Ongoing incorporation of feedback into update draft with continuing review by the Technical Steering Committee (September-November 2010)
- 10. 2nd Public Meeting for presentation of final draft for public comment before submission to SEMA/FEMA (November 8, 2010)
- 11. Final draft of update submitted to SEMA (November 24, 2010)
- 12. Presentation of the approved plan for formal adoption by participating jurisdictions (after approval by FEMA)

Technical Steering Committee

The Technical Steering Committee was formed with the intention of having a diversity of members who would represent the interests of all participating jurisdictions. Planners from the Mid-MO RPC, which works with communities throughout Cole County, initiated the formation of the committee and participated in the committee meetings.

The Technical Steering Committee was formed with representatives of Cole County, all city governments, and Lincoln University. Seven of the eight incorporated communities had direct representation on the committee. The community of St. Thomas elected to have Larry Benz, Cole Public Works Director, represent their interests on the committee (See Appendix B for letter of representation). Mr. Benz also represented Cole County. Additionally, the community of St. Thomas participated in the planning process by submitting a survey, reviewing their mitigation goals and actions, and reviewing a draft of the plan.

The Technical Steering Committee consisted of the following individuals:

| 0.1.0 | D'II E | OCC CE M | |
|---------------------------|---------------------|------------------------------------|--|
| Cole County | Bill Farr | Office of Emergency Management | |
| | Larry Benz | Public Works Director | |
| | Shannon Kliethermes | Public Works Senior Planner | |
| Centertown | Charles Ellis | Chairman | |
| | Nelda Hutinger | Trustee | |
| Jefferson City | Melva Fast | Asst. City Administrator | |
| | Janice McMillan | Community Development | |
| | Bob Rennick | Fire Chief | |
| | Bob Cynova | Police Chief | |
| Lohman | Tom Kirchner | Alderman | |
| Russellville | Karen Platter | Clerk | |
| St. Martins | Kevin Myers | Mayor | |
| St. Thomas | Larry Benz | Cole County Public Works Director | |
| Taos | Wayne Thoenen | Alderman | |
| Wardsville | Randy Libbert | Chairman | |
| Lincoln University | Kevin Pigford | Lincoln University Police Corporal | |

In addition, personnel from Cole County and Jefferson City attended meetings, as needed, to contribute expertise in the areas of GIS, engineering, building regulations, and building code inspections. Planners from the Mid-MO RPC met separately with the Director of the Jefferson City Memorial Airport, Ron Kraft, to discuss levee issues at the airport.

Other key participants in the area contributed to the planning process. The information received from these participants was invaluable to the update of the Cole County/Jefferson City Natural Hazard Mitigation Plan. These participants include:

- Capitol View Drainage District
- Cole County Chiefs Association
- Cole County Fire Protection District
- Diocese of Jefferson City Catholic Schools
- Missouri American Water
- Public Water Supply District #2

Technical Steering Committee Meetings

Meetings of the Technical Steering Committee were held from June 2010 through November 2010. A brief summary of each meeting is shown in Figure 1.5.1. Agendas, sign-in sheets, and announcements for each meeting are included in Appendices C, D, and E.

| Figure 1.5.1 | Technical Steering Committee Meetings | |
|------------------------------|---|-----------------|
| Meeting | Agenda | Meeting Date |
| Meeting No. 1 | This meeting was the initial meeting for the plan update. The group was given a presentation by Mid-MO RPC Staff about the update process. The group discussed possible changes to goals, objectives, and actions. The group decided to postpone more discussion of specific changes until the next meeting, where more people with more pertinent expertise would be present. | 6/1/2010 |
| Meeting No. 2 | Review and editing of mitigation actions pertaining to Flood and Levee Failure. Overview of NFIP and the Community Rating system. An action for Levee Failure was deferred pending more research. | 6/15/2010 |
| Special Districts Meeting | Special districts were invited to a special meeting to review their options in regard to participation in the planning process. | 6/15/2010 |
| Meeting No. 3 | Review and editing of mitigation actions pertaining to Hailstorm, Land Subsidence/Sinkhole, Severe Winter Weather, Tornado, and Windstorm. Committee was introduced to the STAPLEE prioritization method. Probability and severity was set for all natural hazards. Committee reviewed the state plan for guidance. | 6/29/2010 |
| Meeting No. 4 | Review and editing of mitigation actions pertaining to Dam Failure, Drought, Extreme Heat, Earthquake, and Wildfire. Discussed what to expect for prioritization at next meeting. | 7/15/2010 |
| Educators Meeting | School districts were invited to a special meeting to review their options in regard to participation in the planning process. Representatives created new actions for the forthcoming plan. One of these participants (Kevin Pigford of Lincoln University) will represent the educators at the subsequent Technical Steering Committee meetings for prioritization of the mitigation actions and integration/maintenance of the plan. | 7/16/2010 |
| Meeting No. 5 | Review and prioritization of mitigation actions. Steering committee members used the STAPLEE method along with a benefit/cost analysis. Next meeting will continue this process | 7/27/2010 |
| Meeting No. 6 | Continuation of previous meeting. Review and prioritization of mitigation actions. Steering committee members used the STAPLEE method along with a benefit/cost analysis. Public meeting date and location was discussed. | 8/4/2010 |
| Meeting No. 7 | Discussed integration of the Hazard Mitigation Plan into other planning mechanisms in the Planning Area and maintenance of the plan during the next 5 years. Final review of the update. | 11/8/2010 |

Summary of Plan Update

The Technical Steering Committee decided that each section of the original plan needed to be updated. The original plan was written early in FEMA's interpretation of the requirements for Hazard Mitigation Plans. The current guidance, *Local Multi-Hazard Mitigation Planning Guidance*, was published in July 2008. A restructuring of the plan seemed appropriate to fulfill the current interpretation of FEMA requirements in a clear and cohesive manner.

The Technical Steering committee also changed the name of the plan to be in accordance with other county documents and plans.

Given the structural changes, the updated plan's organization is:

Table of Contents

Executive Summary

Prerequisites

Section 1: Introduction and Planning Process

Section 2: Planning Area Profile and Capabilities

Section 3: Risk Assessment

Section 4: Mitigation Strategy

Section 5: Plan Maintenance Process

Section 6: Maps

Appendices

A general description of changes and updates made to the plan are shown in Figure 1.5.2.

| Figure 1.5.2 General Review and Update of Plan by Section | | | | |
|--|---------|--------------------------|--|--|
| Description | Revised | Pages (Original Plan) | | |
| Section 1: Introduction Moved some material from Section 1 to more appropriate sections in the plan. Added some material and reorganized according to the following subsections: Purpose, Background, History of the Cole County/ Jefferson City Natural Hazard Mitigation Plan, Participating Jurisdictions, and The Update Process. Material on Plan Monitoring was moved to a new Section in updated plan (Section 5: Plan Maintenance Process). | Yes | 1-15 | | |
| Section 2: Community Profile Removed and updated community profiles. Updated all charts and graphs to reflect more recent data. Historic properties and the NFIP information were moved to Section 3. Subsection titles were changed and some were merged and/or eliminated. | Yes | 16-39 | | |
| Section 3: Risk Assessment Reviewed all charts and graphs and updated with current information, as necessary; edited text to reflect new information; changed rating system of each natural hazard to "Measure of Probability and Severity" using the same rating system as in the Missouri State Hazard Mitigation Plan 2010. Reorganized hazard profiles and made specific changes to each hazard profile to make the plan a more relevant and useful document. Removed all vulnerability assessment charts to update data and reformat per FEMA guidelines. | Yes | 40-95 | | |
| Section 4: Capability Assessment Section removed entirely: Capability Assessment moved to Section 2. | Yes | 96-111 | | |
| Section 5: Mitigation Goals and Strategies Updated the Mitigation Goals, Objectives, and Actions to reflect decisions made by the Technical Steering Committee and participating jurisdictions; added documentation of changes to Mitigation Actions; added mitigation action matrix for each participating jurisdiction. This section is Section 4 in the update. | Yes | 112-151 | | |
| Section 6: Hazard Worksheets Section removed entirely, information integrated into other parts of plan | | 153-162 | | |
| Section 7: Plan Maps Removed and recreated all maps; numerous new maps created. | Yes | 163-172 | | |

| Requirement \$201.6(b): | 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; |
|-------------------------|--|
| Requirement §201.6(b): | 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; |

Educator Meetings

The Cole County Emergency Management Coordinator, Bill Farr, contacted all school districts within Cole County along with the Diocese of Jefferson City Catholic Schools and Lincoln University. On July 16th, 2010 the Educators Meeting was held to introduce these prospective participants to the Cole County/Jefferson City Natural Hazard Mitigation Plan and the process for participation.

The following representatives were present:

| Cole County R-V School District | Dan Smith | Principal |
|--|---------------|------------------------------------|
| Jefferson City School District | John Byrne | Transportation and Safety Director |
| Diocese of Jefferson City Catholic Schools | Don Novotney | Superintendent |
| Lincoln University | Kevin Pigford | Police Corporal |

Representatives discussed their needs regarding mitigation and outlined two actions to be integrated into the plan. Kevin Pigford was designated by this group to represent the interests of the education representatives at the Technical Steering Committee meetings.

Representatives from the following school districts were contacted via letter, email, and by phone, but did not participate in the meeting or the planning process:

Cole County R-I School District
Blair Oaks R-II School District
Moniteau County C-I School District

Public Meetings for Comment and Input

All meetings were advertised as open to the public. Two meetings were held specifically for public comment and input on the update of this plan. The first public meeting was held on August 24th, 2010, during the drafting stage and the second on November 8th, 2010, prior to the plan being submitted for approval by FEMA. Public notice was given for the meetings in accordance with Missouri's "Sunshine Law" (Revised Statutes of Missouri 610.010, 610.020, 610.023, and 610.024.) The meetings were also announced through various media outlets.

First Public Meeting

The first public meeting was held on August 24th at the Eagles Club in Jefferson City, MO. The public was invited to attend and provide input and discussion in the update process. A presentation was given on the process of the update and the importance of Hazard Mitigation planning. Another presentation was given on the plan itself, with information on where to read a copy of the draft and how to contact the Mid-MO RPC planners. Agendas, sign-in sheets, and meeting announcements are located in Appendices C, D, and E respectively.

Media releases and announcements were posted through the following outlets:

- Jefferson City News Tribune Online Events Calendar Announcement of public meeting was posted August 16th, 2010.
- Jefferson City News Tribune Community Events section Announcement of public meeting was submitted to be included in the weekend edition prior to the meeting date.
- JCTV3 Announcement of public meeting was submitted to be aired on this public access channel several times daily.
- Mid-Missouri Regional Planning Commission office Announcement of public meeting was posted for public viewing on August 11th. The announcement was visible to all public traffic in accordance with Missouri's "Sunshine Law".
- Announcements were sent to all participating jurisdictions to distribute and post in their respective communities and departments including:
 - o Cole County/Jefferson City Emergency Management
 - o Cole County Public Works and Planning Departments
 - o Cole County R-V School District
 - o Centertown Board of Trustees
 - o Jefferson City Planning and Administration offices
 - o Jefferson City Public School District
 - o Jefferson City Diocese
 - o Lincoln University Office of Public Safety
 - Lohman Board of Alderman
 - Russellville Board of Alderman

- o St. Martins
- o St. Thomas
- o Taos City Council
- Wardsville Board of Trustees
- Announcements were also sent to all Region F RHSOC (Regional Homeland Security Oversight Committee) Emergency Management Directors (EMD) and Coordinators (EMC). This announcement included a news release for posting and a letter stating the upcoming planning process that would be coming to those counties in the future. The following county's EMDs received the announcement:
 - o Audrain County
 - o Boone County
 - o Callaway County
 - Camden County
 - o Cole County
 - Cooper County
 - o Gasconade County
 - Howard County
 - o Miller County
 - o Moniteau County
 - o Montgomery County
 - o Morgan County
 - o Osage County

Second Public Meeting

The second public meeting was held on November 8th, 2010 at the Cole County Emergency Services Building in Jefferson City, MO. The public was invited to attend and provide input and discussion in the update process. Despite extensive public announcement of this meeting, there were no attendees other than the Cole County Emergency Management Coordinator and the Mid-MO RPC planners. The sign-in sheet from the meeting and the meeting announcement are located in Appendices D and E respectively.

Media releases and announcements were posted through the following outlets:

- Jefferson City News Tribune Online Events Calendar Announcement of public meeting was posted November 1, 2010.
- Mid Missouri Regional Planning Commission office Announcement of public meeting was posted for public viewing on August 11th. The announcement was visible to all public traffic in accordance with Missouri's "Sunshine Law".
- Mid-Missouri Regional Planning Commission website Home page and Calendar page

- Meeting announcement dispersed to board members at Mid-Missouri Regional Planning Commission Board of Directors meeting on October 27th, 2010
- Announcements were sent to all participating jurisdictions to distribute and post in their respective communities and departments including:
 - o Cole County/Jefferson City Emergency Management Agency
 - o Cole County Public Works and Planning Departments
 - o Cole County R-V School District
 - Centertown Board of Trustees
 - o Jefferson City Planning and Administration offices
 - o Jefferson City Public School District
 - o Jefferson City Diocese
 - o Lincoln University Office of Public Safety
 - o Lohman Board of Alderman
 - Russellville Board of Alderman
 - o St. Martins
 - o St. Thomas
 - o Taos City Council
 - Wardsville Board of Trustees
- Announcements were also sent to all Region F RHSOC (Regional Homeland Security Committee) Emergency Management Directors (EMD) and Coordinators (EMC). This announcement included a news release for posting and a letter stating the upcoming planning process that would be coming to those counties in the future. The following county's EMDs received the announcement:
 - Audrain County
 - o Boone County
 - o Callaway County
 - o Camden County
 - o Cole County
 - Cooper County
 - o Gasconade County
 - Howard County
 - o Miller County
 - Moniteau County
 - o Montgomery County
 - Morgan County
 - o Osage County

| Requirement | In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: |
|-------------|---|
| §201.6(b): | (3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information. |

Many existing plans, studies, and reports were consulted in the development of this plan. These include:

- Missouri State Hazard Mitigation Plan (2010), State Emergency Management Agency (SEMA)
- Cole County/City of Jefferson Emergency Operations Plan (2008)
- Lincoln University Emergency Operations Plan (2008)
- The Cole County Master Plan
- The Jefferson City Comprehensive Plan
- Comprehensive Economic Development Strategy for the Mid-MO Region (2009)
- Long Range Transportation Plan (LRTP), Missouri Department of Transportation
- Regional Transportation Plan (2009), Mid-MO Regional Planning Commission
- 2030 Metropolitan Transportation Plan, Capital Area Metropolitan Planning Organization (CAMPO)
- Atlas of Missouri Ecoregions (2002), Timothy A. Nigh and Walter A. Schroeder, Missouri Department of Conservation
- SEMA Situation Reports (http://sema.dps.mo.gov/SitReps/Situation%20Reports.htm)
- Missouri Drought Plan (2002), Missouri Department of Natural Resources
- Missouri Weather Patterns and Their Impact on Agriculture, Grant L. Darkow, University Extension, University of Missouri-Columbia
- 2008 Bagnell Dam Emergency Action Plan Osage Project No. 459, Ameren UE

Section 2: Planning Area Profile and Capabilities

2.1 Geography and Ecology

Cole County is located in central Missouri with an area covering 391 square miles. It is approximately midway between Kansas City to the west and St. Louis to the east.

The county is bordered on the north by the Missouri River, which separates it from Boone and Callaway counties, on the east by the Osage River which separates it from Osage County, on the south by Miller County, and on the west by Moniteau County.

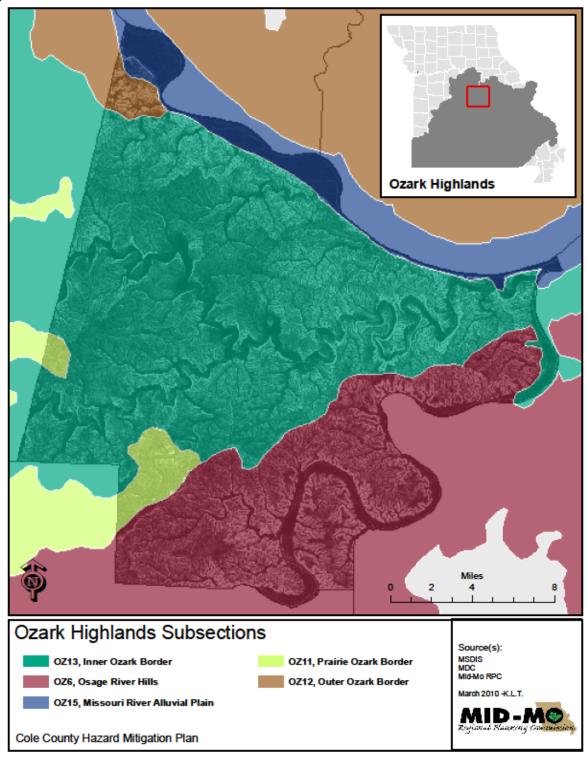
The county is located in the northern part of the Ozark Highlands. The *Atlas of Missouri Ecoregions*, published by the Missouri Department of Conservation, describes the Ozark Highlands as

a distinctive biogeographic region that includes most of southern Missouri and much of northern Arkansas and small parts of Illinois, Oklahoma, and Kansas. Geologically, the Ozark Highlands is a low structural dome of essentially horizontally bedded strata that has been undergoing erosion and weathering for a quarter billion years into a thoroughly dissected plateau.

The Ozark Highlands is very diverse biologically and geographically with rugged hills, prairies, savannas, and open woodlands. The predominant underlying bedrock is carbonate (limestone and dolomite), giving rise to karst topographic features such as caves, underground streams, and sinkholes. Natural springs provide an abundance of fresh water in many areas.

The land area of Cole County falls into five different subsections of the Ozark Highlands distinguished by differing landforms, soils, and vegetation (see Figure 2.1.1). In turn, these subsections give rise to differences in land use patterns, conservation needs, and vulnerability to certain natural hazards.

Figure 2.1.1



The following information summarized from the *Atlas of Missouri Ecoregions* gives brief descriptions of the landtypes found within the subsections in Cole County.

Inner Ozark Border

This subsection includes most of the northern, western, and central parts of the county. It consists of dissected plains and hills with local reliefs averaging 100-150 feet. It encompasses the area of both branches of the Moreau River. Historically, the area was largely oak savanna, woodland, and forest with frequent glades and small prairie openings. Currently, the area consists of row crops, pasture, second growth forests, and overgrown glades. Urbanization pressures are strong in the Jefferson City area.

Osage River Hills

This subsection includes the eastern and southern portions of the county. This area lies within the Osage River watershed and is characterized by deeply dissected hills with local reliefs averaging 200-250 feet. High bluffs afford scenic views of the Osage River. Historically, oak woodland was dominant in the area with mixed-oak and mix-hardwood on rougher sites. The area is currently comprised of pastures, small isolated woodlots, cedar thickets, and second-growth forests.

Missouri River Alluvial Plain

This subsection, consisting of the Missouri River channel and its adjoining alluvial plain, is found along the northern border of the county. Soils are deep and loamy and the area is subject to riverine flooding. Historically, the vegetation was typical bottomland species such as cottonwood, willow, sycamore, silver maple, elm, and hackberry.

Prairie Ozark Border

Fingers of the eastern part of this subsection extend into the western part of Cole County in two locations. This subsection is a high, smooth plain with less than 100 feet of local relief. The underlying strata are limestone and dolomite and the area is blanketed with loess. This area is transitional between the wooded hills of the Ozarks and the open plains to the west; historically, it was mostly prairie with trees alongside streams. Currently, the land is mostly pasture with some significant tracts of cropland.

Outer Ozark Border

A small tongue of this subsection extends into the far northwestern part of Cole County. This area is steep loess-covered hills and bluffs along the Missouri River. The underlying strata are limestone and dolomite. This area is the most rugged bluffland on the southern side of the Missouri River west of the Osage River. Prior to European settlement, oak savanna and woodlands dominated the higher areas and dense oak and mixed-hardwoods were found in the steep-sided limestone ravines. Currently, the uplands are primarily fescue pasture and the ravines are second-growth forests and cedar thickets.

Missouri River

The Missouri River and its relationship to Cole County deserve special attention. The Missouri River is the longest river in the nation; it measures 2,341 miles long, according to the U.S. Geological Survey. It is the defining physical feature in Mid-Missouri and forms the northern border of Cole County. The river drains approximately one sixth of the United States and is only a few hundred miles from its confluence with the Mississippi River at St. Louis when it flows through mid-Missouri. The location of population centers close to the river in Cole County has meant significant flooding damage in the county in the recent past (see Section 2.4).

In both 1994 and 1995 the Missouri River was listed as one of the "10 Most Endangered Rivers in the Country" by American Rivers, a river conservation group (http://www.americanrivers.org/). This "Most Endangered" list does not reflect the rivers in the worst condition; rather, it seeks to highlight rivers "confronted by decisions in the coming year that could determine their future." The Missouri River was chosen for the list in the mid-1990s because of dam, channelization, navigation, and agricultural runoff issues.

Flood control structures, power plants, and other engineering projects have profoundly changed the course of the river since Lewis and Clark first traversed it in the early 1800s. In recent years debates over the future of the Missouri River have taken place among the seven states through which it runs. Commercial river traffic, recreational use, environmental concerns, managing river levels to comply with the needs of endangered species, and the preservation of sacred and historical sites along the river and floodplain are all issues which make the management of the river a sensitive balancing act.

The State of Missouri, located at the mouth of the river, feels the impact of river management decisions further upstream. Likewise, Cole County feels the impact of whatever decisions are made by the U.S. Army Corps of Engineers, the overseer of the river, concerning the river.

Public Land

There are over 6,000 acres of public land in Cole County (see Figure 2.1.2). Most of this land is managed by the Missouri Department of Conservation; in a few cases this is done in conjunction with the Cole County Government or Jefferson City.

| Figure 2.1.2 Public Land in Cole County | | | | | |
|---|---|-------|--|--|--|
| | | | | | |
| Binder Lake | Jefferson City/MO Department of Conservation | 223 | | | |
| Conservation Commission Head Quarters | MO Department of Conservation | 153 | | | |
| Clark's Hill/Norton State Historic Site | MO Department of Natural Resources | 13 | | | |
| Honey Creek Access | MO Department of Conservation | 84 | | | |
| Hough Lake | Jefferson City/MO Department of Conservation | 6 | | | |
| Jaycee Park Lake | Cole County/MO Department of Conservation | 7 | | | |
| Jefferson Landing State Historic Site | MO Department of Natural Resources | ~1 | | | |
| Mari-Osa Access | MO Department of Conservation | 28 | | | |
| Marion Bottoms Conservation Area | MO Department of Conservation | 2997 | | | |
| Marion Access | MO Department of Conservation | 2 | | | |
| McKay Park Lake | Jefferson City/MO Department of Conservation | 6 | | | |
| Moreau 50 Access | MO Department of Conservation | 10 | | | |
| Pikes Camp Access | MO Department of Conservation | 170 | | | |
| Runge Conservation Area and Nature Center | MO Department of Conservation | 107 | | | |
| Scrivner Road Conservation Area | MO Department of Conservation | 919 | | | |
| Smith Conservation Area | MO Department of Conservation | 516 | | | |
| Smoky Waters Conservation Area | MO Department of Conservation | 1041 | | | |
| St. Thomas Ferry Access | MO Department of Conservation | ~2 | | | |
| Stringtown Bridge Access | MO Department of Conservation | 50 | | | |
| | Total | ~6335 | | | |
| Source: MO Department of Conservation (MDC), MO Spa | tial Data Server(MSDIS), MO Department of Natural Resources | (DNR) | | | |

2.2 Climate

Cole County, like the rest of the state of Missouri, has variable weather patterns and extremes of temperature. With its central continental location, Missouri receives air masses bringing weather from all directions.

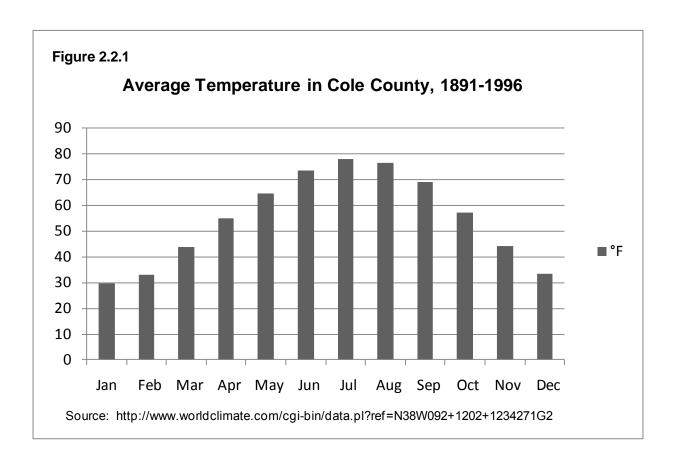
Warm humid air from the Gulf of Mexico can bring moisture year round and is the principal source of precipitation in the spring, summer, and fall; in contrast, air from other directions may be hot and dry (southwest), warm and dry (west), cold (northwest and north), cool and moist (northeast). The flow from the different source regions typically changes in a matter of days, giving rise to the commonly heard expression in Missouri, "If you don't like the weather, wait a day."

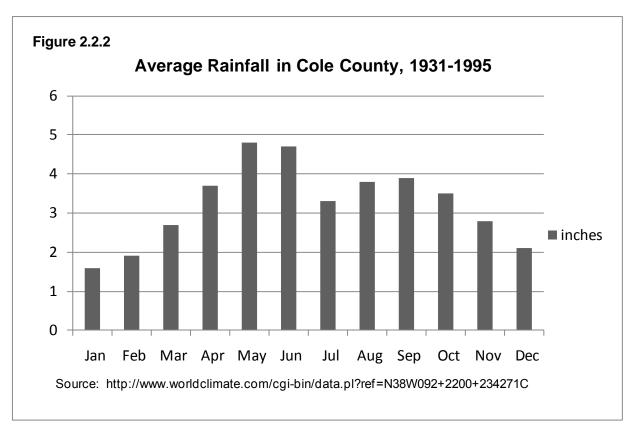
At times, the flow of air from one of the source regions will settle in and persist for weeks or months. These periods are associated with particular upper air flow patterns and associated surface conditions.

The Missouri State Hazard Mitigation Plan quotes Dr. Grant Darkow of the University of Missouri - Department of Atmospheric Science on the importance of understanding these weather patterns:

"The persistence of these weather patterns and the possible resulting condition is the subject of several of the natural disasters discussed in this study. Specifically, floods, droughts, fires, heat waves, severe cold, and winter storms can be the result of the persistence of one of these weather patterns, whereas tornadoes can represent the outgrowth of rapid shifts in weather patterns. Knowing these patterns may assist in alerting disaster planners and the general public to the possibility of a developing emergency situation."

While Cole County does have extreme variations in weather at times, there is a relative pattern of temperature and rainfall consistent with a humid continental climate (see Figures 2.2.1 and 2.2.2). The data shown in the charts was collected at the Jefferson City Water Plant weather station. The rainfall data collected in the years 1931-1995 showed an average of 39" of rainfall per year; average rainfall in this data set is defined as including precipitation of any form.





2.3 History

Cole County was originally home to the Osage and other groups of indigenous people. White settlers from Kentucky and Tennessee began settling in the area around 1816; the county was officially organized in 1820.

After Missouri was admitted into the United States in 1821, the General Assembly appointed a commission to decide on the permanent location of the state capital. The statute appointing the commission stipulated that the capital was to be on the Missouri River within forty miles of the mouth of the Osage River. The site of present day Jefferson City was eventually chosen as the site; lots were laid out for the town by Daniel Morgan Boone, son of the famous frontiersman, and Major Elias Bancroft. In 1826, Jefferson City was officially designated as the permanent seat of state government and the first capitol building was completed. All the workings of state government, including the Great Seal, were moved from the temporary capital in St. Charles to Jefferson City.

Prior to this there were very few people living in Jefferson City; after 1826, the population began to increase rapidly. In 1837, the capitol building burned; work on a new capitol began the next year using stone from the Missouri River bluffs near the city for the building and limestone from Callaway County for the pillars.

As the state of Missouri grew, so did Cole County; with the capital city located within its boundaries, the county has played a central role in Missouri ever since statehood.

2.4 Natural Hazard History

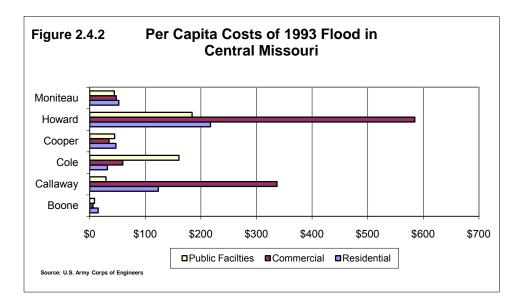
Cole County has been subject to many natural hazards in the past. Floods, droughts, windstorms, hail, tornadoes, severe winter weather, and extreme heat have all taken their tolls; dam failure has threatened. A brief overview of the more recent natural hazard events in the county will be discussed here; more extensive history will be given with each Hazard Profile in Section 3 of the plan.

Probably the most prominent natural hazard within memory is the **Flood of 1993** (see Figure 2.4.1). This flood was devastating to much of Missouri and the Midwest; it took a great toll in Cole County. According to data from the U.S. Corps of Engineers (http://el.erdc.usace.army.mil/flood/fl93home.html), there was \$1Million to \$5Million in damages in each of the following sectors in the county: public facilities, residential, transportation system, and utilities. In addition, both commercial property damages and emergency expenses were in the range of \$0.5Million to \$1Million.





Estimates of the per capita costs of this flood for three sectors in the Mid-Missouri Region are shown in Figure 2.4.2. It is important to note that this chart reflects *per capita cost* and that Cole County has the second largest population, by far, in the region. (Neighboring Boone County has the largest population, approximately twice that of Cole County.)



The devastating flood of 1993 was followed by floods in 1994 and 1995. Cole County was included in Presidential Disaster Declarations for flooding each of these years.

Although the county does not experience severe flooding every year, thunderstorms can be expected annually. In most years there are reports of associated high winds (**Windstorms**) and **Hail** someplace in the county. In 1999, thunderstorm winds caused \$1Million in property damage in Jefferson City. Severe hail was a problem in the spring of 2006.

Less frequently, thunderstorms will spawn **Tornadoes** in the area. Cole County experienced eight tornadoes between 1950 and 2009 resulting in \$2.8 million in property damage. There were no injuries or deaths from these tornadoes, but this is an ever present concern due to the frequency of thunderstorm activity and the potential for formation of tornadoes.

Severe Winter Weather can be expected in Cole County on a general average of every other year. The county has been included in three Presidential Disaster Declarations for severe winter weather since 2006. A winter storm in December 2007 caused widespread power outages leaving an estimated 25% of the county without power.

On the other end of the temperature spectrum, periods of **Extreme Heat** also commonly occur in the county, usually at least every other year. **Drought** is an ever present possibility; there were significant crop and livestock losses in the county during the last major drought in 2005-2006.

The very real issue of potential **Dam Failure** came to the forefront in the county in 2009 with the near failure of Renn's Lake Dam in Jefferson City.

2.5 Demographics

The seat of the state government in Cole County makes the county unique demographically from most of its neighboring counties and the other counties in the Mid-Missouri region. The county's population centers on the capital of Jefferson City with over half of the county's citizens residing there.

Cole County has the highest median household income and the lowest percentage of citizens below the poverty level in the area and region; the median household income is almost 19% higher than the state median and the poverty level is well below the state average. With the exception of neighboring Boone County, where the University of Missouri is located, Cole County has a much higher population density, higher percentage of high school graduates, and a much higher percentage of persons with a college degree or more than the rest of the region. The mean travel time to work is well below the state average and again, with the exception of Boone County which has a similar mean travel time, lower than the surrounding area and region.

These unique statistics are a direct result of the businesses and organizations associated with the State Capital. The types of business associated with state government generally pay more and require more formal education. These characteristics impact many of the other demographic statistics seen in Cole County and reflect the importance and significance of state government to the Cole County economy.

Some key demographic statistics for Cole County and the State of Missouri are shown in Figure 2.5.1.

| Figure 2.5.1 | | | | | |
|--|-------------|-----------|--|--|--|
| Selected Demographic Statistics | | | | | |
| | Cole County | Missouri | | | |
| Total population (2008 estimate) | 74,313 | 5,911,605 | | | |
| Population change (2000-2008 estimate) | 4.1% | 5.6% | | | |
| Persons per square mile | 182.6 | 81.2 | | | |
| High school graduates (age 25+) | 85.3% | 81.3% | | | |
| Bachelors degree or higher (age 25+) | 27.4% | 21.6% | | | |
| Persons with a disability (age 5+) | 10,225 | 973,637 | | | |
| Mean travel time to work (min.) | 17.4 | 23.8 | | | |
| Median household income (2008 estimate) | \$55,684 | \$46,847 | | | |
| Persons below poverty level (2008 estimate) | 9.3% | 13.5% | | | |
| Source: U.S. Census Bureau, http://quickfacts.census.gov/qfd/states/29000.html | | | | | |

It is important to note that a small part of Jefferson City is located across the Missouri River in Callaway County. Key infrastructure located in Callaway County includes the airport and water treatment facility; there is also a small population of Jefferson City residents in Callaway County. The Callaway County section of Jefferson City is included in this plan.

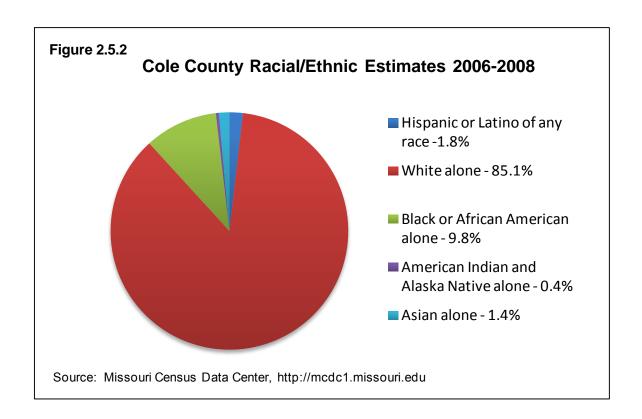
Racial/Ethnic Demographics

Cole County has been and continues to be a predominantly white non-Hispanic community. White non-Hispanics comprise 85.1% of the population as estimated by the 2006-2008 American Community Survey of the U.S. Census Bureau. This compares to a statewide percentage of 82.1% and a nationwide percentage of 65.9%.

The next largest group in Cole County is black/African American non-Hispanics at 9.8% of the population. This compares to a statewide percentage of 11.1% and a nationwide percentage of 12.1%.

Cole County has seen an increase in the Hispanic/Latino population in recent years. Hispanics made up 1.3% in the 2000 Census and are now an estimated 1.8%. Many Hispanics are coming to the area for jobs in the agricultural sector.

The estimated racial/ethnic profile of the county is shown in Figure 2.5.2.

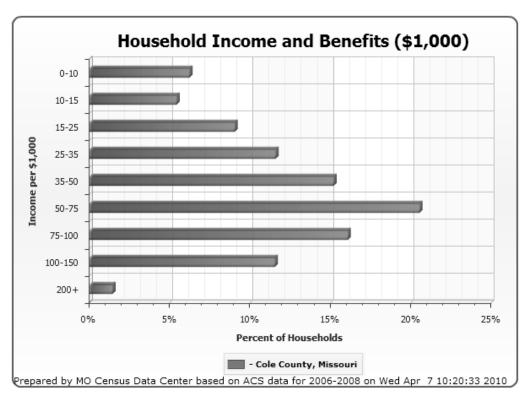


Income

The median household income in Cole County (\$55,684) is higher than the median household income for the state of Missouri (\$46,847), according to the 2008 estimate from the American Community Survey (ACS) of the U.S. Census Bureau. This statistic reflects the high number of government jobs in the county.

The distribution of household income and benefits in the county is shown in Figure 2.5.3.

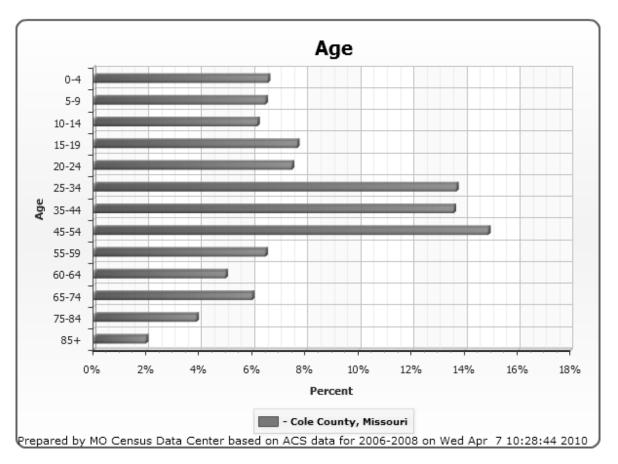
Figure 2.5.3.



Vulnerable Populations

The elderly, children, and the poor are all particularly vulnerable to natural hazards. Over 12% of the county's population is under the age of 10; over 12% is 65 years and older, according to 2008 estimates from the American Community Survey of the U.S. Census Bureau (see Figure 2.5.4).





There is also significant poverty in the county (9.3%), even though it is lower than the state rate of 13.5% (see Figure 2.5.1). The population in the lower income brackets is particularly vulnerable to natural hazards. Poor housing conditions, lack of reliable transportation, and inadequate insurance can all contribute to making the impacts of a natural hazard worse for people living in poverty.

Hazard mitigation planning must take into account the needs of these, and other, vulnerable populations.

2.6 Education

Pre K-12

There are approximately 13,941 students and 1,102 teachers in 41 public and private schools in the Planning Area (see Figure 2.6.1).

Students are a vulnerable population as they are dependent on others for natural hazard information during the school day. A mitigation plan must take this into account. Often, this has been done by building schools out of floodplains and having safe areas within the school where the students can assemble in the event of a disaster. School buildings can also act as safe rooms and shelters during a natural disaster.

| Figure 2.6.1 | | | | | | | |
|--|-----------------------------|--------|--------|-----|--|--|--|
| Cole County Pre-K - 12 Schools Public Location Schools Students Teacher | | | | | | | |
| Cole County R-I | W County | 3 | 689 | 86 | | | |
| Blair Oaks R-II | E/SE County | 2 | 953 | 75 | | | |
| Cole County R-V | SW County | 2 | 677 | 68 | | | |
| Jefferson City | N County, S Callaway County | 18 | 7,397 | 596 | | | |
| Total Public Schools | | 25 | 10,329 | 874 | | | |
| Private | | | | | | | |
| Calvary Lutheran High School | Jefferson City | 1 | 44 | 12 | | | |
| Central Baptist Christian Academy | Jefferson City | 1 | 36 | 5 | | | |
| Immanuel Lutheran School | Jefferson City | 1 | 99 | 7 | | | |
| Jefferson City Diocesan Schools | Jefferson City | 4 | 2,382 | 141 | | | |
| Jefferson City Diocesan Schools | St. Martins | 1 | 221 | 11 | | | |
| Jefferson City Diocesan Schools | St. Thomas | 1 | 73 | 6 | | | |
| Jefferson City Diocesan Schools | Taos | 1 | 195 | 12 | | | |
| Jefferson City Diocesan Schools | Wardsville | 1 | 67 | na | | | |
| Kim School Montessori | Jefferson City | 1 | 31 | 2 | | | |
| Kindergarten Connection | Jefferson City | 1 | 41 | 3 | | | |
| Moreau Montessori School | Jefferson City | 1 | 48 | 8 | | | |
| Trinity Lutheran Early Childhood | Jefferson City | 1 | 46 | 1 | | | |
| Trinity Lutheran | Jefferson City | 1 | 329 | 20 | | | |
| Total Private Schools | | 16 | 3,612 | 228 | | | |
| Total Public and Private Schools | 41 | 13,941 | 1,102 | | | | |
| Source: http://dese.mo.gov/directory/discnty.htm#cole | | | | | | | |

Source: http://www.privateschoolreview.com/county_private_schools/stateid/MO/county/29051

Higher Education

Lincoln University is located in Jefferson City with approximately 3,200 students and 450 faculty/staff.

The University has an Emergency Operations Plan (EOP) and was a participating jurisdiction in the original Jefferson City-Cole County Natural Hazard Mitigation Plan.

The university is a potential resource for hazard mitigation planning in Cole County. The buildings could potentially function as shelters in the event of an emergency. Also, as the Natural Hazard Mitigation Plan is implemented, there is the potential to engage student help with local mitigation projects either as a part of course work or as internships.

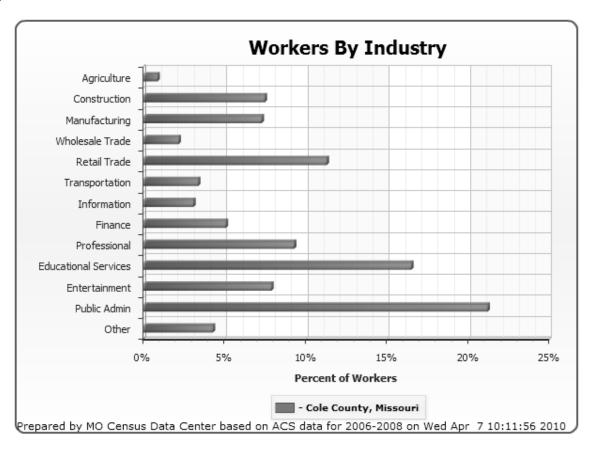
2.7 Economy, Industry, and Employment

Cole County is within the designated Jefferson City, Mo Metropolitan Statistical Area (MSA), according to the U.S. Census Bureau. MSAs are geographic entities defined by the U.S. Office of Management and Budget (OMB) for use by Federal statistical agencies in collecting, tabulating, and publishing Federal statistics. An MSA consists of a core urban area of 50,000 or more population, the county or counties containing the core urban area, and adjacent counties which have a high degree of social and economic integration with the urban core (as measured by commuting to work).

Jefferson City is the urban core for the MSA which includes Cole County and neighboring Callaway, Moniteau, and Osage Counties. The MSA designation is indicative of growth in Jefferson City area; prior to the year 2000, the core area's population was below 50,000.

Due to the location of the state capital in Jefferson City, Cole County has jobs that are often more lucrative than those found in the surrounding counties. The county benefits from a highly educated and diversified workforce. Additionally, the workforce tends to be in stable, higher income industries such as government, education, and mid-management. Figure 2.7.1 depicts the principle types of employment found in the county; the major employers are shown in Figure 2.7.2.





| Figure 2.7.2 Major Employers in Cole County | | | | | |
|--|-----------|-------------------------------|-----------|--|--|
| Employer | Employees | Employer | Employees | | |
| State of Missouri | 18,203 | | | | |
| Scholastic, Inc. | 1,500 | Capital Region Medical Center | 1,450 | | |
| St. Mary's Health Center | 1,200 | Jefferson City Public Schools | 1,106 | | |
| Walmart Supercenter (2 locations) | 783 | Central Bank | 750 | | |
| Learfield Communications | 650 | ABB Power T&D Company | 625 | | |
| Jefferson City | 624 | Jefferson City Medical Group | 564 | | |
| RR Donnelley | 525 | Lincoln University | 475 | | |
| Hy-Vee Food Stores | 383 | Hawthorn Bank | 378 | | |
| Quaker Window Products | 340 | Modine Manufacturing Co | 333 | | |
| Unilever Home & Personal Care | 317 | CenturyLink | 275 | | |
| Cole County | 268 | Gerbes Family Shopping Center | 235 | | |
| Capitol Plaza Hotel & Convention Center | 200 | Command Web Missouri | 200 | | |

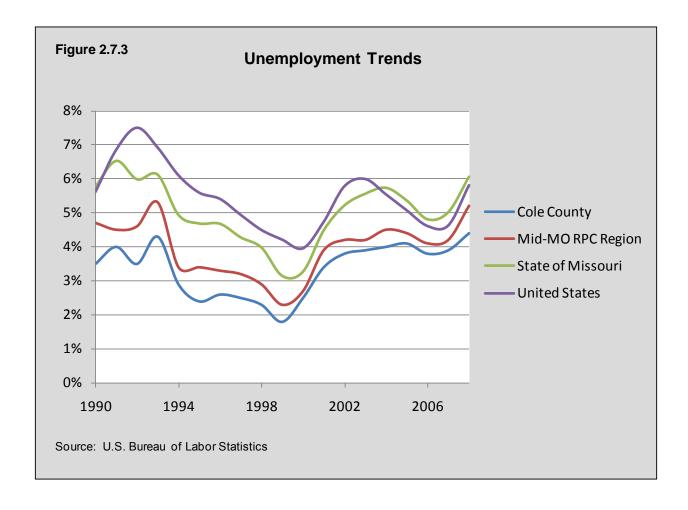
Agriculture

Agriculture remains an important component of the economy in Cole County even though less than 1% of the population is currently employed in the sector. There are 180,840 acres in farmland in the county according to the 2007 Census of Agriculture from the U.S. Department of Agriculture (USDA). This farmland comprises over 72% of the land area of the county. Of the total farmland, 154,079 acres are cropland and 120,577 of these acres were harvested in 2007.

Hay, soybeans, corn, and wheat are the major crops in the county; cattle and pigs are the main livestock. Other crops include grain sorghum, grapes, garden vegetables, nuts, fruit, native plants, trees, and shrubs. The total market value for all agricultural products (crops and livestock) sold in 2007 was \$34,711,000.

Unemployment Rates

The entire Mid-Missouri Region has lower unemployment rates than the state and nation (see Figure 2.7.3). Cole County and neighboring Boone County have the lowest unemployment rates in the region. In fact, Cole County has one of the lowest unemployment rates in the country. These rates, combined with a higher than average median income and low commute times, ostensibly make Cole County an economically healthy area.



2.8 Transportation and Commuting Patterns

Roadways

Cole County, like most of the United States, is heavily dependent upon the personal vehicle and roads. Roads are the dominant transportation arteries in Cole County, moving most goods and services that flow in and out of the county. The Missouri Department of Transportation (MoDOT) takes care of all state and federal roads in the county; Cole County Public Works maintains roads in unincorporated areas and the various jurisdictions maintain their own roads.

The three major highways in Cole County (U.S. 54, U.S 50, and U.S. 63) all intersect near the center of Jefferson City, the state capital. U.S. 54 provides access to the Lake of the Ozarks, a major recreational and tourism area approximately 60 miles southwest of Jefferson City. U.S. 50 provides access to the State Fair in Sedalia approximately 75 miles to the west. U.S. 54 and U.S. 63 both provide access to Interstate 70, approximately 30 miles to the north. Interstate 70 connects to St. Louis in the east and Kansas City in the west and is the most used east-west artery in the state.

Many citizens from neighboring counties work and conduct business in Jefferson City. The Capital Area Metropolitan Planning Organization (CAMPO) cites the following 2005 Annual Average Daily Traffic (AADT) in their 2030 Metropolitan Transportation Plan:

- Missouri River Bridge Crossing (U.S. 54/63) 43,253 AADT
- U.S. 50 just west of the "tri-level" (U.S.50/54/63 interchange) 37,880 AADT

Public Transportation

OATS, Inc., a private not-for-profit corporation, was founded by a group of seniors in 1971 as transportation for older citizen. Its current mission is to "provide reliable transportation for transportation disadvantaged Missourians so they can live independently in their own communities." OATS, Inc. serves a wide diversity of citizens in 87 Missouri counties. In Cole County, the organization provides transportation between Jefferson City and the communities of Centertown, Eugene, Meta, Russellville, St. Martin, Taos, and Wardsville. OATS predominantly serves the elderly and disabled, but will serve anyone needing transportation.

Public transportation is available within Jefferson City through the fixed-route city run bus system (JEFFTRAN) which provides service Monday through Friday. JEFFTRAN also provides a door-to-door paratransit service (Handi Wheels) for clients who qualify under the Americans with Disabilities Act (ADA).

Railroads

Passenger Rail

Amtrak provides passenger service from Jefferson City to both Kansas City (and points westward) and St. Louis (and points eastward) via the *Missouri River Runner*. Two trains traveling in each direction stop daily at the Jefferson City Amtrak Station. The completion of a 9,000-foot rail siding extension just west of California, Missouri in November 2009 increased the on-time arrival percentage of the *Missouri River Runner* trains from 55-79% in recent years

to over 90%, according to the Missouri Department of Transportation (MoDOT). With a better record of on-time arrivals, ridership has subsequently increased about 20%.

Rail Freight

A large amount of freight travels by rail through Cole County. Union Pacific operates tracks through the northern part of the county. According to the Missouri Department of Transportation's Long-Range Transportation Plan (LRTP), 33 percent of all product movement in Missouri is conducted by rail. Kansas City and St. Louis are ranked as the and busiest rail hubs in the nation, according to the Missouri Economic Research and Information Center (MERIC).

Air

The Jefferson City Memorial Airport, operated by Jefferson City, is located across the Missouri River in Callaway County. A wide variety of military, state government, corporate, and general aviation aircraft operate out of the airport but there are no scheduled commercial airline flights. The nearest public passenger airport is the Columbia Regional Airport, located approximately twenty miles north of Jefferson City in neighboring Boone County. Lambert-St. Louis International Airport and Kansas City International Airport are both 2-3 hours drive from Jefferson City.

Commuting Patterns

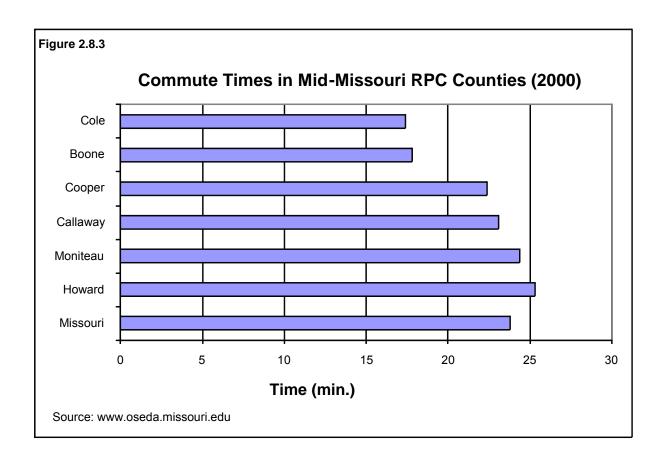
At the time of the 2000 U.S. Census, more than 90% of Cole County residents worked within the county (see Figure 2.8.1). The seat of state government in Jefferson City provides a wealth of employment possibilities both in government jobs and in sectors supporting and serving the various needs of the government and its employees.

| Figure 2.8.1 Commuting Destinations of Cole County Workers | | | | | |
|--|------------|---------------------|--|--|--|
| Location of Work | # of Trips | % of Total Trips | | | |
| Missouri Counties | | | | | |
| Cole | 32,470 | 90.9 | | | |
| Callaway | 1,046 | 2.9 | | | |
| Boone | 1,018 | 2.8 | | | |
| 19 other Missouri Counties | 1113 | 3.1 | | | |
| 4 other states and District of Columbia | 55 | 0.2 | | | |
| 2 other countries (Japan and India) | 27 | 0.1 | | | |
| Total | 35,729 | 100 | | | |
| Source: U.S. Census (2000), http://mcdc2.missouri.edu/websas/workflow.html | | | | | |

County-to-county workflow data from the 2000 Census indicates a significant percentage of workers come from other places to work in Cole County. The highest numbers of out-of-county workers come from neighboring Callaway, Osage, Boone, and Moniteau Counties (see Figure 2.8.2). This population of commuters adds significantly to the Cole County population on weekdays.

| Figure 2.8.2 | | | | |
|--|------------|---------------------|--|--|
| Residence of Cole County Workers | | | | |
| Residence | # of Trips | % of Total Trips | | |
| Missouri Counties | | | | |
| Cole | 32,470 | 63.5 | | |
| Callaway | 5,384 | 10.5 | | |
| Osage | 2,990 | 5.9 | | |
| Boone | 2,817 | 5.5 | | |
| Moniteau | 2,172 | 4.3 | | |
| Miller | 1,687 | 3.3 | | |
| Maries | 789 | 1.5 | | |
| 40 other Missouri counties | 2696 | 5.3 | | |
| Other states (AR, CO, IL, KS, OH, TX) | 100 | 0.2 | | |
| Total 51,105 | | | | |
| Source: U.S. Census (2000), http://mcdc2.missouri.edu/websas/workflow.html | | | | |

Commute times for workers residing in Cole County are the lowest in the region served by the Mid-Missouri RPC and significantly lower than the state average (see Figure 2.8.3). Once again, this reflects the large number of employment possibilities in the county due to the location of the state government in Jefferson City. Only neighboring Boone County, home to the University of Missouri, has similarly low commute times.



2.9 Inventory of Assets and Capabilities

The Planning Area has many human and material assets at risk from natural hazards. There are also many capabilities in the Planning Area which can be and are used to mitigate the effects of natural hazards. This section profiles both.

In the first part of this section, each participating jurisdiction is profiled according to general organizational structure, assets, and capabilities. Each profile also includes an inventory of structures (including critical structures, building counts, and assessed values), equipment, and population. These inventories provide one of the bases for the Risk Assessment for each hazard in Section 3. There are also general profiles of the fire protection districts and water districts.

At the end of this section, an overview of policy, planning, and program capabilities within the Planning Area is included; there are also brief discussions of legal authority and political willpower. Finally, the important roles of community/regional partnerships, non-governmental/volunteer organizations, and media organizations are discussed.

Planning Area/Cole County

| Figure 2.9.1 | | | | |
|---|---|--|--|--|
| Cole County Profile | | | | |
| Classification | class county | | | |
| Total population* | 73,624 | | | |
| Median household income (2008 dollars)* | \$52,483 | | | |
| Median owner-occupied housing value* | \$132,700 | | | |
| Total housing units* | 32,012 | | | |
| | PWSD #1, PWSD #2, PWSD #3, PWSD #4, | | | |
| Water service | Missouri American Water Company | | | |
| Electric service | AmerenUE and Three Rivers Electric Cooperative | | | |
| Ambulance service | Cole County Emergency Medical Services | | | |
| Sewer service | City of Jefferson, AquaSource and private systems | | | |
| Fire service | Cole County Fire Protection District | | | |
| Master plan | Yes | | | |
| Emergency Operations Plan | Yes | | | |
| Building regulations | Yes | | | |
| Zoning regulations | No | | | |
| Subdivision regulations | Yes | | | |
| Storm water regulations | No – working on ordinance (July 2010) | | | |
| NFIP participation | Yes | | | |
| Floodplain regulations | Yes | | | |

 $^{^{\}star}$ Estimates from surveys conducted in 2006-2008 by the American Community Survey (ACS) of the U.S. Census Bureau; includes entire incorporated and non-incorporated area of county

Sources: US Census Bureau; Community Survey

| County Owned Assets | | | | |
|--|------------------|--|--|--|
| Property | Replacement Cost | | | |
| (9) Buildings | \$19,325,450 | | | |
| (122) Vehicles | \$6,144,789 | | | |
| Other Equipment | \$2,461,438 | | | |
| (See Appendix F for a detailed listing of Cole County Assets and Values) | | | | |
| Source: Cole County Public Works | | | | |

Assessed Values

| Figure 2.9.2 | | | | |
|---------------------------------------|-----------------|--|--|--|
| Cole County | | | | |
| 2010 Assessed Values | | | | |
| Real Estate Valuation | | | | |
| Residential | \$671,800,900 | | | |
| Agricultural | \$6,753,060 | | | |
| Commercial | \$320,021,790 | | | |
| Total | \$998,575,750 | | | |
| Personal Property Valuation | | | | |
| Residential | \$117,808,658 | | | |
| Agricultural | \$10,162,060 | | | |
| Commercial | \$105,909,841 | | | |
| Total | \$233,880,559 | | | |
| Total Value | \$2,464,912,618 | | | |
| Source: Cole County Assessor's Office | | | | |

Agriculture

Figure 2.9.3 shows value estimates for agricultural land in Cole County and estimates of crop and livestock production. Since 71% of the land area of Cole County is farmland, the impact of agricultural losses due to a natural hazard could be a potential threat to the economic stability of the region.

| Figure 2.9.3 | |
|--|--|
| 2007 Cole County | Agricultural Overview |
| Number of Farms | 1103 |
| Land In Farms | 180,840 acres |
| | (71% of Cole County) |
| Market Value of Products Sold | \$34,711,000 |
| Crop Sales | \$8,450,000 |
| Livestock Sales | \$26,306,000 |
| 2007 Census of Agriculture, County Profiles; http://www.agcensus.usd | a.gov/Publications/2007/Online_Highlights/County_Profiles/ |

Critical Facilities

FEMA defines "critical facilities" as all manmade structures or other improvements that, because of their function, size, service area, or uniqueness, have the potential to cause serious bodily harm, extensive property damage, or disruption of vital socioeconomic activities if they are destroyed, damaged, or if their functionality is impaired.

Critical facilities (Figures 2.9.4 - 2.9.6) commonly include all public and private facilities that a community considers essential for the delivery of vital services and for the protection of the community. The adverse effects of damaged critical facilities can extend far beyond direct physical damage. Disruption of health care, fire, and police services can impair search and rescue, emergency medical care, and even access to damaged areas.

| Figure 2.9.4 | | | | | |
|---|---------------------|--|--|--|--|
| Critical Medical Facilities | | | | | |
| Federally Qualified Health Centers | | | | | |
| Community Health Center of Central Missouri | Jefferson City | | | | |
| Hospitals | | | | | |
| St. Mary's Health Center | Jefferson City | | | | |
| Capital Region Medical Center | Jefferson City | | | | |
| Nursing Home Facilities | | | | | |
| Adams Street Place | Jefferson City | | | | |
| Ashbury Heights of Jefferson City | Jefferson City | | | | |
| Bristol Manor of Jefferson City | Jefferson City | | | | |
| Castleparke Retirement Center 1, 2, and 3 | Jefferson City | | | | |
| Villa Marie Skilled Nursing Facility | Jefferson City | | | | |
| Golden Living center-Jefferson City | Jefferson City | | | | |
| Heisinger Lutheran Home | Jefferson City | | | | |
| Jefferson City Manor Care Center | Jefferson City | | | | |
| Maplewood, INC | Jefferson City | | | | |
| Melody House | Jefferson City | | | | |
| Oak Tree Villas, INC | Jefferson City | | | | |
| Jefferson City Nursing and Rehabilitation Center, LLC | Jefferson City | | | | |
| St. Josephs Home | Jefferson City | | | | |
| Westbrook Terrace-Assisted Living by Americare Jefferso | | | | | |
| Health Department Facilities | | | | | |
| Cole County Health Department | Jefferson City | | | | |
| Source: Missouri Department of Health and Senior Services Information Technolog | y Services Division | | | | |

Critical Water Supply Facilities

| Figure 2.9.5 Public Water Supply Districts - Critical Infrastructure | | | | |
|--|--------------------------|---------------|--|--|
| District | # of Towers/ Tanks | # of Wells | Area Served | |
| PWSD #1 | 5 | 7 | Unincorporated Cole County, Jefferson City, | |
| PWSD #2 | 5 | 6 | Unincorporated Cole County, Jefferson City, Wardsville | |
| PWSD #3 | 1 | 2 | Unincorporated Cole County, St. Martins | |
| PWSD #4 | 4 | 4 | Unincorporated Cole County, Jefferson City, Taos | |
| PWSD #5 | 2 | 1 | St. Thomas | |
| Source: Public Water Supply Districts | | | | |

| Figure 2.9.6 | |
|--|---------------------|
| Public Water Treatment | Plant |
| Facility | People Served |
| Missouri American Water Treatment Plant - Jefferson City | 27, 500 (estimated) |
| Source: Missouri American Water | |

Historic Properties

| Figure 2.9.7 Cole County - National Register of Historic Places | | | | | |
|--|----------------|--|-------------------|--|--|
| National Register-listed Property | Location | National Register-listed Property | Location | | |
| Lewis Bolton House | Wardsville | Lincoln University Hilltop Campus Historic District | Jefferson City | | |
| Broadway-Dunklin Historic District | Jefferson City | Lohman's Landing Building | Jefferson City | | |
| Nelson C. and Gertrude A. Burch House | Jefferson City | Missouri Governor's Mansion | Jefferson City | | |
| Oscar G. and Mary H. Burch House | Jefferson City | Missouri State Capitol Building and Grounds | Jefferson City | | |
| Capitol Avenue Historic District | Jefferson City | Missouri State Capitol Historic District | Jefferson City | | |
| Cole County Courthouse and Jail- Sheriff's House | Jefferson City | Missouri State Penitentiary Warden's House | Jefferson City | | |
| Cole County Historical Society Building | Jefferson City | Moreau Park Historic District | Jefferson City | | |
| Dulle Farmstead Historic District | Jefferson City | Munichburg Commercial Historic District | Jefferson City | | |
| East End Drugs | Jefferson City | Lester S. and Missouri "Zue" Gordon Parker House | Jefferson City | | |
| Gay Archaeological Site | Restricted NA | Dr. Joseph P. and Effie Porth House | Jefferson City | | |
| Gensky Grocery Store Building | Jefferson City | John B. and Elizabeth Ruthven House | Jefferson City | | |
| Claud D. and Berenice Sinclair Grove House | Jefferson City | Charles J. and Clara B. Schmidt House | Jefferson City | | |
| Herman Haar House | Jefferson City | John M. and Lillian Sommerer House | Jefferson City | | |
| Philip Hess House | Jefferson City | Hugh and Bessie Stephens House | Jefferson City | | |
| Ivy Terrace | Jefferson City | Tergin Apartment Building | Jefferson City | | |
| Jefferson City Community Center | Jefferson City | Albert and Wilhelmina Thomas House | Jefferson City | | |
| Jefferson City National Cemetery | Jefferson City | Villa Panorama | Jefferson City | | |
| Jefferson Female Seminary | Jefferson City | Joseph and Elizabeth Wallendorf House | Jefferson City | | |
| Kaullen Mercantile Co. | Jefferson City | Zion Lutheran Church | Cole County | | |
| Lansdown-Higgins, House | Cole County | William E. and Frederica M. Zuendt House | Jefferson City | | |
| Source: http://www.dnr.mo.gov/shpo/Cole.htm | | | | | |

Development Trends

Future development for the participating jurisdictions in this plan may consist of changes in zoning, land use, annexation, building expansions or new construction, changes in population and density, and construction of critical infrastructure.

In 2010 annexations by the Village of Taos in the northeast portion of the county nearly tripled the geographic size of the community. This annexation process brought in properties that lie along the Osage River and Moreau River. With this annexation, there will be changes in basic services such as water and sewer for former county residents and the community will now have properties lying in designated flood plains.

Jefferson City is a growing metropolitan area and will have increases in basic services, new construction, and population.

For all jurisdictions, any increases in population, land use changes, zoning, annexations, expansion of buildings, or equipment purchases may change vulnerability to certain hazards. More information related to development trends for Cole County and Jefferson City can be found at the websites listed below or through attendance at commission or council meetings.

- http://www.colecounty.org/
- http://www.jeffcitymo.org/

Cole County Governmental Structure

Cole County is governed by an elected three member Board of Commissioners composed of an Eastern Commissioner, a Western Commissioner, and a Presiding Commissioner. The Commission carries out the following responsibilities:

- establishes Cole County policy
- approves and adopts the annual budget for all County operations
- approves actual expenditures for each department
- supervises the operations of County departments
- ensures County-wide compliance with numerous statutory requirements
- acts as liaison with County boards, commissions, and other local and regional governmental entities

Cole County has the following departments and offices:

Assessor Finance Public Administrator

Auditor Health Public Works

Circuit Clerk Information Systems Recorder of Deeds

Collector Juvenile Justice Sheriff
County Clerk Maintenance Treasurer

Emergency Management Prosecuting Attorney

The following office and departments play especially important roles in hazard mitigation:

Office of Emergency Management (OEM) - Cole County and Jefferson City share oversight of this office. The staff is responsible for emergency contingency planning, public education, and emergency response coordination in both jurisdictions. Emergency Management staff write and update the Emergency Operations Plan (EOP), conduct ongoing public education related to emergency information, and identify and fix gaps in emergency response, preparedness, and mitigation. The County's Emergency Management staff has had extensive training from SEMA, FEMA, and other bodies in emergency response, preparedness, mitigation, and overall emergency management.

Information Systems Department - This department is responsible for the computing needs of County staff and for disseminating, protecting, and administering the County's computer data. Current, reliable, and accessible GIS data is immensely helpful for accurate analysis of hazard prone areas.

Public Works Department - This department is an integral part of mitigation planning. Decisions about new roads and maintenance of current infrastructure are intertwined with the overall mission of hazard mitigation planning. This department consists of the following divisions:

- Planning Department Responsible for reviewing and approving development plats in the unincorporated portions of the county with the purpose of promoting the health, safety and general welfare of the public; administers building inspections for habitable and commercial structures throughout the unincorporated areas; oversees the Federal Floodplain Program for Cole County.
- Design and Construction Department Responsible for initiating, monitoring, and completing capital improvement projects related to Cole County's transportation network; conducts and coordinates the inspection and acceptance of subdivision streets; administers the Neighborhood Improvement District (NID) program; provides technical assistance to other County offices.
- Road and Bridge Department Responsible for over 940 miles of road and the associated right-of-ways as well as the numerous bridges and drainage structures throughout Cole County. Routine and preventative maintenance includes applying gravel to rural roads, asphalt and concrete patching and sealing, roadside ditching, vegetation control, and bridge maintenance and repair. Traffic services provided include street signing, regulatory signing, and snow and ice control.
- County Park Department The County Park has a lake that is managed by the Missouri Department of Conservation (MDC). The American Legion, who has developed a state of the art sports complex with four ball fields of various sizes, leases a portion of the park.

Technical Capabilities

Cole County has extensive technical capabilities to implement hazard mitigation into the overall role of County government.

The County has full time planners, engineers, emergency response staff, building inspectors, and others to help guide and employ identified hazard mitigation strategies. The staff is backed by a computer system and information technology department that allows for quick and easy exchange of information, advanced GIS capabilities, and other associated tasks. High-speed internet connections, e-mail, online databases, and user-friendly websites provide a wide range of information for both citizens and county employees. Solid coordination exists between agencies and local jurisdictions. The County also has an extensive inventory of trucks, earthmovers, and other vehicles necessary to maintain and build mitigation structures, should specific structures be needed. The combination of a diverse range of skill sets and the necessary tools make Cole County particularly suited to implement hazard mitigation strategies.

Website: http://www.colecounty.org/

Jefferson City

| Figure 2.9.8 | | | | |
|--|---|--|--|--|
| | on City Profile | | | |
| Classification | Home Rule city | | | |
| Population* | 42,230 | | | |
| Median household income (2008 dollars)* | \$47,379 | | | |
| Median owner-occupied housing value* | \$132,700 | | | |
| Total housing units* | 19,125 | | | |
| Water service | Missouri American Water Company, Public Water Supply District (PWSD) #1, PWSD #2, PWSD #4, several state wells (Capitol, prison), Callaway Water District (Callaway portion of Jefferson City) | | | |
| Electric service | AmerenUE and Three Rivers Electric Cooperative | | | |
| Ambulance service | Cole County Emergency Medical Services | | | |
| Sewer service | Jefferson City and private systems | | | |
| Fire service | Jefferson City | | | |
| Master plan | Yes ("Comprehensive Plan") | | | |
| Emergency Operations Plan | Yes | | | |
| Building regulations | Yes | | | |
| Zoning regulations | Yes | | | |
| Subdivision regulations | Yes | | | |
| Storm water regulations | Yes | | | |
| NFIP participation | Yes | | | |
| Floodplain regulations | Yes | | | |
| * Estimates from surveys conducted in 2006-2008 by the Sources: US Census Bureau; Community Survey | American Community Survey (ACS) of the US Census Bureau | | | |
| City Ov | City Owned Assets | | | |
| Property | Replacement Cost | | | |
| 156 Buildings | \$46,741,273 | | | |
| 368 Vehicles | \$14,504,985 | | | |
| (See Appendix F for a detailed listing of Jefferson City Assets and Values) | | | | |
| Source: Insurance statement provided by Jefferson City st | aff | | | |

Assessed Values

| Figure 2.9.9 Jefferson City | | | |
|---|---------------|--------------|---------------|
| 2010 Assessed Values | | | |
| Real Estate Valuation Personal Property Valuation | | | Valuation |
| Residential | \$351,677,600 | Residential | \$60,394,353 |
| Agricultural | \$857,170 | Agricultural | \$481,452 |
| Commercial | \$286,808,630 | Commercial | \$94,617,439 |
| Total | \$639,343,400 | Total | \$155,493,244 |
| Source: Cole County Assessor's Office | | | |

Website: http://www.jeffcitymo.org/

Lohman

| Figure 2.9.10 | | | |
|---|--|--|--|
| Lohman Profile | | | |
| Classification class city | | | |
| Population (2000) | 168 | | |
| Median household income (1999) | \$54,583 | | |
| Median owner-occupied housing value (2000) | \$92,100 | | |
| Total housing units (2000) | 67 | | |
| Water service | City of Lohman and Private wells | | |
| Electric service | AmerenUE and Three Rivers Electric Cooperative | | |
| Ambulance service | Cole County Emergency Medical Services | | |
| Sewer service | City of Lohman | | |
| Fire service | Russellville–Lohman Fire District | | |
| Master plan | No | | |
| Emergency Operations Plan | Yes | | |
| Building regulations | Yes | | |
| Zoning regulations | Yes | | |
| Subdivision regulations | No | | |
| Storm water regulations | No | | |
| NFIP participation | No | | |
| Floodplain regulations | No | | |
| Sources: US Census Bureau; Community Survey | | | |

The City of Lohman does not own any city property.

| Figure 2.9.11 | Lohn | nan | | |
|---|----------------------|--------------|-----------|--|
| | 2010 Assessed Values | | | |
| Real Estate Valuation Personal Property Valuation | | | | |
| Residential | \$1,269,900 | Residential | \$282,810 | |
| Agricultural | \$4,140 | Agricultural | \$41,290 | |
| Commercial | \$206,500 | Commercial | \$45,312 | |
| Total | \$1,480,540 | Total | \$369,412 | |
| Source: Cole County Assessor's Office | | | | |

Russellville

| Figure 2.9.12 Russellville Profile | | |
|---|--|--|
| Classification | class city | |
| Population (2000) | 758 | |
| Median household income (1999) | \$34,408 | |
| Median owner-occupied housing value (2000) | \$70,900 | |
| Total housing units (2000) | 346 | |
| Water service | Russellville | |
| Electric service | AmerenUE | |
| Ambulance service | Cole County Emergency Medical Services | |
| Sewer service | Russellville | |
| Fire service | Russellville-Lohman Fire Protection District | |
| Master plan | No | |
| Emergency Operations Plan | Yes | |
| Building regulations | Yes | |
| Zoning regulations | Yes | |
| Subdivision regulations | Yes | |
| Storm water regulations | No | |
| NFIP participation | No | |
| Floodplain regulations | No | |
| Sources: US Census Bureau; Community Survey | | |
| Russellville - (| City Owned Assets | |
| Property | Replacement Cost | |
| Storage Garage | \$14,850 | |
| City Hall | \$57,090 | |
| Storage Shed | \$39,710 | |
| Gazebo | \$11,000 | |
| Park Shelter | \$14,520 | |
| Restroom - City Park | \$12,100 | |
| Historic Ice House | \$5,500 | |
| New Water Tower | \$317,000 | |
| Water Tower | \$224,170 | |
| Pump House | \$18,480 | |
| Pump Control Panel | \$30,360 | |
| Duplex pump (6) | \$27,720 | |
| Simplex pump (3) | \$9,240 | |
| Lift Station | \$8,470 | |
| Grinder pump (12 units) | \$19,800 | |
| cimeri pamp (12 amo) | \$19,000 | |
| Trucks (2) | \$30,740 | |

Assessed Values

| Figure 2.9.13 Russellville | | | |
|---|-------------|--------------|-------------|
| 2010 Assessed Values | | | |
| Real Estate Valuation Personal Property Valuation | | | |
| Residential | \$4,697,440 | Residential | \$900,439 |
| Agricultural | \$3,480 | Agricultural | \$71,465 |
| Commercial | \$1,016,310 | Commercial | \$107,092 |
| Total | \$5,717,230 | Total | \$1,078,996 |
| Source: Cole County Assessor's Office | | | |

Website: http://www.russellvillemo.com

St. Martins

| Figure 2.9.14 | | |
|--|---|--|
| St. Martins Profile | | |
| Classification | class | |
| Population* | 1,122 | |
| Median household income* | \$54,709 | |
| Median owner-occupied housing value* | \$141,482 | |
| Total housing units (2000) | 392 | |
| Water service | Public Water Supply District #3 and private wells | |
| Electric service | AmerenUE and Three Rivers Electric Cooperative | |
| Ambulance service | Cole County Emergency Medical Services | |
| Sewer service | Jefferson City and private systems | |
| Fire service | Regional West Fire Protection District | |
| Master plan | No | |
| Emergency Operations Plan | Yes | |
| | Yes – enforced by County – some stricter than | |
| Building regulations | County | |
| Zoning regulations | Yes | |
| Subdivision regulations | Yes | |
| Storm water regulations | No | |
| NFIP participation | No | |
| Floodplain regulations | No | |
| * Estimates from surveys conducted in 2006-2008 by the | American Community Survey (ACS) of the US Census Bureau | |
| Sources: US Census Bureau; Community Survey | | |
| St. Martins - City Owned Assets | | |
| Property | Replacement Cost | |
| Buildings (2) | \$270,000 | |
| Sewer Pump Stations | \$254,136 | |
| Equipment | \$58,000 | |
| Source: City of St. Martins Insurance Statement (2010) | | |

| Figure 2.9.15 St. Martins | | | |
|---|--------------|--------------|-------------|
| 2010 Assessed Values | | | |
| Real Estate Valuation Personal Property Valuation | | | |
| Residential | \$10,919,450 | Residential | \$2,112,226 |
| Agricultural | \$12,300 | Agricultural | \$102,086 |
| Commercial | \$1,482,080 | Commercial | \$270,219 |
| Total | \$12,413,830 | Total | \$2,484,531 |
| Source: Cole County Assessor's Office | | | |

St. Thomas

| Figure 2.9.16 | | |
|---|---|--|
| St. Th | omas Profile | |
| Classification | class city | |
| Population (2000) | 287 | |
| Median household income (1999) | \$43,571 | |
| Median owner-occupied housing value (2000) | \$79,200 | |
| Total housing units (2000) | 107 | |
| Water service | PWSD #5 and private wells | |
| Electric service | AmerenUE Three Rivers Electric Cooperative | |
| Ambulance service | Cole County Emergency Medical Services | |
| Sewer service | Private – in process of developing a City sanitary sewer system | |
| Fire service | Cole County Fire Protection District | |
| Master plan | No | |
| Emergency Operations Plan | Yes – part of the County EOP | |
| Building regulations | Yes – enforced by Cole County Public Works | |
| Zoning regulations | No | |
| Subdivision regulations | No | |
| Storm water regulations | No | |
| NFIP participation | No | |
| Floodplain regulations | No | |
| Sources: US Census Bureau; Community Survey | | |
| City Ov | vned Assets | |
| Property | Replacement Cost | |
| City Hall | \$146,000 | |
| Water Treatment Plant | \$119,000 | |
| Storage Building | \$2,500 | |
| Control Building | \$7,300 | |
| Source: City of St. Thomas Insurance Statement (2010) | | |

| Figure 2.9.17 St. Thomas | | | |
|---|-------------|--------------|-----------|
| 2010 Assessed Values | | | |
| Real Estate Valuation Personal Property Valuation | | | |
| Residential | \$1,801,820 | Residential | \$298,262 |
| Agricultural | \$14,540 | Agricultural | \$120,303 |
| Commercial | \$103,520 | Commercial | \$54,055 |
| Total | \$1,919,880 | Total | \$472,620 |
| Source: Cole County Assessor's Office | | | |

<u>Taos</u>

| Figure 2.9.18 | |
|---|--|
| Та | os Profile |
| Classification | class city |
| Population (2000) | 870 |
| Median household income (1999) | \$50,333 |
| Median owner-occupied housing value (2000) | \$84,000 |
| Total housing units (2000) | 315 |
| Water service | PWSD #4 |
| Electric service | AmerenUE and Three Rivers Electric Cooperative |
| Ambulance service | Cole County Emergency Medical Services |
| Sewer service | Private and AquaSource |
| Fire service | Osage Fire Protection District |
| Master plan | No |
| Emergency Operations Plan | Yes |
| Building regulations | Yes |
| Zoning regulations | Yes |
| Subdivision regulations | Yes |
| Storm water regulations | No |
| NFIP participation | No |
| Floodplain regulations | No |
| Sources: US Census Bureau; Community Survey | |
| City Ov | vned Assets |
| Property | Replacement Cost |
| Concessions/Meeting Hall and contents | \$49,000 |
| Park Pavilion | \$50,000 |
| Park Facilities Misc. | \$30,000 |
| 12 Light Poles with Lights | \$125,000 |
| Entrance Sign | \$2,000 |
| Source: City of Taos Insurance Statement (2010) | |

| Figure 2.9.19 | Taos | | | |
|---|----------------------|--------------|-------------|--|
| | 2010 Assessed Values | | | |
| Real Estate Valuation Personal Property Valuation | | | | |
| Residential | \$8,195,620 | Residential | \$1,657,529 | |
| Agricultural | \$34,900 | Agricultural | \$104,303 | |
| Commercial | \$223,240 | Commercial | \$141,624 | |
| Total | \$8,453,760 | Total | \$1,903,456 | |
| Source: Cole County Assessor's C | Office | | | |

Wardsville

| Figure 2.9.20 | |
|---|--|
| | sville Profile |
| Classification | Village |
| Population (2000) | 976 |
| Median household income (1999) | \$57,813 |
| Median owner-occupied housing value (2000) | \$136,200 |
| Total housing units (2000) | 347 |
| Median gross rent (2000) | \$518 |
| Water service | Village of Wardsville and PWSD #2 |
| Electric service | AmerenUE and Three Rivers Electric Cooperative |
| Ambulance service | Cole County Emergency Medical Services |
| Sewer service | Private and Village sanitary sewer system |
| Fire service | Cole County Fire Protection District |
| Master plan | No |
| Emergency Operations Plan | Yes – Part of Cole County EOP |
| Building regulations | Yes – Enforced by County |
| Zoning regulations | Yes |
| Subdivision regulations | Yes |
| Storm water regulations | Yes (2004) |
| NFIP participation | Yes |
| Floodplain regulations | No |
| Sources: US Census Bureau; Community Survey | |
| Village (| Owned Assets |
| Property | Replacement Cost |
| Pump Houses (2) | \$303,000 |
| Water Tower | \$450,000 |
| Pump Stations (4) | \$277,257 |
| Treatment Plants (3) | \$295,000 |
| Lift Stations (2) | \$40,000 |
| Storage Unit | \$30,000 |
| Garage | \$40,000 |
| Storage Tank | \$400,000 |
| Source: Wardsville City Clerk's Office | |

| Figure 2.9.21 Wardsville | | | | | | |
|---|--------------|--------------|-------------|--|--|--|
| 2010 Assessed Values | | | | | | |
| Real Estate Valuation Personal Property Valuation | | | | | | |
| Residential | \$15,974,580 | Residential | \$1,130,320 | | | |
| Agricultural | \$53,110 | Agricultural | \$257,686 | | | |
| Commercial | \$749,910 | Commercial | \$256,197 | | | |
| Total | \$16,777,600 | Total | \$1,644,203 | | | |
| Source: Cole County Assessor's Office | | | | | | |

Special Districts

School Districts

The following four public school districts are located in the Planning Area: Cole County R-I, Blair Oaks R-II, Cole County R-V, and Jefferson City Public Schools. Each district has an elected Superintendent and School Board along with several administrative staff. Combined, the school districts employ more than 800 teachers and educate more than 10,000 students in 25 schools.

Public school students in the very northwest corner of Cole County attend schools in the Moniteau C-I School District in neighboring Moniteau County.

Building Counts and Replacement Costs

| 119 0 | chool Districts Assessed | Valuoo | | | |
|---|--------------------------|--|--|--|--|
| School District Buildings Replacement Cost (buildings, contents, and athletic structures) Assessed Valuation | | | | | |
| | NA | \$48,113,149 | | | |
| | \$3,050,364 | \$58,251,809 | | | |
| | NA | \$84,447,713 | | | |
| | \$168,411,831 | \$1,175,343,600 | | | |
| 3 | 3 | ings (buildings, contents, and athletic structures) NA \$3,050,364 NA | | | |

Sources: MO Department of Elementary and Secondary Education - Revised: February 10 2009; Cole County School Districts insurance statements

| Figure 2.9.23 | | | | | | |
|--|-----------|--------------------------------|--|--|--|--|
| Higher Education Facilities | | | | | | |
| | | Replacement Cost (building and | | | | |
| College/University | Buildings | contents) | | | | |
| Lincoln University | 62 | \$211,577,230 | | | | |
| Source: Lincoln University Purchasing Department | | | | | | |

Population

| Figure 2.9.24 | | | | | | |
|---|--|---------------------|-----------------------|----------|--|--|
| School District | Cole County School District School Name | Grades | Certificated Staff | Students | | |
| | Cole Co. R-I Elem. | Pre-K thru 5 | 34 | 277 | | |
| Cole Co. R-I | Cole Co. R-I Middle | 6 thru 8 | 24 | 181 | | |
| | Russellville High | 9 thru 12 | 28 | 231 | | |
| Colo Co. D.V | Eugene Elem. | K thru 6 | Certificated Staff 5 | 314 | | |
| Cole Co. K-V | Eugene High | 7 thru 12 | 34 | 363 | | |
| | Blair Oaks Elem. | K thru 4 | 37 | 456 | | |
| Blair Oaks R-II | Blair Oaks Middle School | 5 thru 8 | NA | NA | | |
| | Blair Oaks High | 9 thru 12 | 38 | 497 | | |
| | Belair Elem. | K thru 5 | 30 | 506 | | |
| Cole Co. R-I Cole Co. R-V Blair Oaks R-II Jefferson City | Callaway Hills Elem. | K thru 5 | 22 | 252 | | |
| | Cedar Hill Elem. | K thru 5 | 27 | 367 | | |
| | East Elem. | K thru 5 | 27 | 300 | | |
| | Clarence Lawson Elem. | K thru 5 | 44 | 449 | | |
| | Moreau Heights Elem. | K thru 5 | 31 | 380 | | |
| | North Elem. | K thru 5 | 27 | 361 | | |
| | South Elem. | K thru 5 | 25 | 229 | | |
| | Pioneer Trail Elementary | K thru 5 | NA | NA | | |
| | Thorpe J. Gordon Elem. | K thru 5 | 23 | 275 | | |
| | West Elem. | K thru 5 | 28 | 374 | | |
| | Southwest Early Childhood Center | Pre-K | NA | NA | | |
| | Lewis And Clark Middle | 6 thru 8 | 71 | 946 | | |
| | Thomas Jefferson Middle | 6 thru 8 | 73 | 967 | | |
| | Simonsen Ninth Grade Ctr. | 9 | 55 | 624 | | |
| | Nichols Career Ctr. | 9 thru 12 | 26 | NA | | |
| | Prenger Family Ctr. | 9 thru 12 | NA | NA | | |
| | Jefferson City High | 9 thru 12 | 136 | 1980 | | |
| Missouri Department of Ele | ementary and Secondary Education - Revised | l: February 10 2009 | | | | |

Development Trends

Information about development trends for the participating school districts and Lincoln University is, for the most part, general in nature. Future development for the Cole County R-V School District and the Jefferson City School District may consist of changes in districting, closing or opening of schools, building expansions, inclusion of more mobile classroom units, and expansion of athletic facilities.

The Jefferson City School District is currently expanding the Southwest Elementary School building and construction will be complete in 2011. The Blue Ribbon Committee, which reports to the school board, evaluates expansion needs for the district and is currently discussing the need for a second high school.

Any increases in student population, expansion of school buildings, or equipment purchases may change vulnerability to certain hazards.

Fire Protection Districts

There are six fire protection districts which respond to fires, accidents, and other emergencies within the Planning Area (see Figure 2.9.25). Mutual aid agreements exist between all the departments and also with surrounding county departments. The fire districts have been proactive in public education campaigns, updating training, and general outreach efforts to ensure the community at large is safe. The fire districts are key players in hazard mitigation and preparedness activities.

| Figure 2.9.25 | | | | | | | | |
|---|---------------------|--------------------|--------|--------------|-----------------------|--------------------|---------------------|--|
| Cole County Fire Protection Districts | | | | | | | | |
| | | | | Firefighters | | | | |
| Fire Protection District | Туре | # Fire Stations | Career | Volunteer | Paid- per- Call | Other Employees | Other Volunteers | |
| Cole County | Volunteer | 8 | 0 | 0 | 75 | 1 | 0 | |
| Jefferson City | Career | 5 | 69 | 0 | 0 | 1 | 0 | |
| Osage | Volunteer | 1 | 0 | 40 | 0 | 0 | 6 | |
| Regional West | Mostly Volunteer | 5 | 2 | 0 | 33 | 1 | 0 | |
| Russellville-Lohman | Volunteer | 2 | 0 | 25 | 0 | 0 | 13 | |
| California Rural | Volunteer | 4 | 0 | 27 | 0 | 0 | 5 | |
| Source: http://missouri.firedepartments.net/county/MO/ColeCounty.html | | | | | | | | |

The following five fire districts are rural and supported by taxes levied on all Cole County residents, with the exception of residents of Jefferson City:

- Cole County Fire Protection District
- Osage Fire Protection District
- Regional West Fire Protection District
- Russellville-Lohman Fire Protection District
- California Rural Fire Protection District

Residents of Jefferson City support the Jefferson City Fire Protection District with part of their city tax levy.

Water Districts

There are five Public Water Supply Districts located in the Planning Area. In addition, the Callaway County Water District supplies water to the Callaway portion of Jefferson City; Missouri American Water, a private utility, supplies water to part of Jefferson City and part of unincorporated Cole County.

Each water district is composed of an elected board. The districts are responsible for maintaining existing water supply infrastructure and developing new infrastructure.

Water Districts are primarily related to mitigation activities focused on drought, wildfire, and flood. Connecting water supplies so that areas have multiple water supplies is an important mitigation strategy. The areas served and interconnections of all water providers in the Planning Area are shown in Figure 2.9.26.

Protecting water supply infrastructure from floodwaters is another important task also under the purview of the Districts. Critical facilities belonging to the water districts are included in the section on Critical Facilities (see Figure 2.9.5).

| Figure 2.9.26 | | | | | | |
|---------------------------------------|--|--|--|--|--|--|
| Water Providers Serving Planning Area | | | | | | |
| Provider | Area Served | Interconnections | | | | |
| PWSD #1 | Cole County (unincorp.), Jefferson City | Missouri American Water; (future plans to interconnect with PWSD #2) | | | | |
| PWSD #2 | Cole County (unincorp.), Jefferson City, Wardsville | Missouri American Water; (future plans to interconnect with PWSD #1) | | | | |
| PWSD #3 | Cole County (unincorp.), St. Martins | | | | | |
| PWSD #4 | Cole County (unincorp.), Jefferson City, Taos | | | | | |
| PWSD #5 | St. Thomas | | | | | |
| Callaway Co. Water District | Jefferson City (Callaway Co. area) | | | | | |
| Missouri American Water | Cole County (unincorp.), Jefferson City | PWSD #1 and #2 | | | | |
| City of Lohman | Lohman | | | | | |
| City of Russellville | Russellville | | | | | |
| Village of Wardsville | Wardsville | | | | | |
| Private Wells | Lohman, St. Martins, St. Thomas | | | | | |
| State Wells | Jefferson City | | | | | |
| Sources: PWSDs, Missouri American | n Water, community surveys | | | | | |

Policy, Planning, and Program Capabilities

This part of the capability assessment is designed to summarize and evaluate existing plans, polices, programs, and ordinances in the Planning Area which are involved in some way with hazard mitigation. A summary of the plans and regulations in the Planning Area is shown in Figure 2.9.27.

| Figure 2.9.27 | | | | | | | | |
|--|--|--|---|--|--|---|------|------------|
| Plans and Regulations | | | | | | | | |
| Cole County and Incorporated Communities | | | | | | | | |
| Cole County Lohman Russellville St. Martins St. Thomas | | | | | | | Taos | Wardsville |
| Master plan | | | | | | | | |
| Emergency Operations Plan | | | | | | | | |
| Building regulations | | | | | | | | |
| Zoning regulations | | | | | | | | |
| Subdivision regulations | | | | | | | | |
| Stormwater regulations | | | · | | | · | · | |
| NFIP participation | | | · | | | · | · | |
| Floodplain regulations | | | | | | | | |

Cole County Master Plan

The *Cole County Master Plan* is the primary planning document for the unincorporated area of Cole County. The incorporated communities of Cole County are mentioned in this plan but are not part of the Planning Area. An update to the *Cole County Master Plan* was completed in 2010.

Hazard mitigation is not specifically addressed in this plan but integration of the Hazard Mitigation Plan with other planning processes in Cole County will be undertaken in the future (see Section 5.3).

Cole County/City of Jefferson Emergency Operations Plan (2008)

The Cole County/City of Jefferson Emergency Operations Plan is a comprehensive document which, in addition to covering emergency response and recovery, specifically discusses mitigation. The foreword states that the EOP will "...outline actions to be taken by local government officials and cooperating private or volunteer organizations to: 1) prevent avoidable disasters and reduce the vulnerability of Cole County and City of Jefferson residents to any disasters that may strike; 2) establish capabilities for protecting citizens from the effects of disasters..." These first two goals of the plan are mitigation goals.

Areas covered in the plan which relate to mitigation are: communications and warning systems, media points of contact, acquisition of resources and supplies in preparation for emergency events, evacuation plans for flood, dam failure, levee failure; and sheltering procedures.

Jefferson City Comprehensive Plan

The *Jefferson City Comprehensive Plan* is the chief means of regulating changes in land use within the city; the Planning and Zoning Commission serves as the administrative and review body. The plan is amended periodically to keep current with development, usage, and zoning changes.

Building Regulations

Building regulations and codes can have a large impact on mitigating the effects of natural hazards. Periodic evaluation is important to ensure that the codes are appropriate to the area; enforcement is essential for the codes to be effective

Both Cole County and Jefferson City have adopted the International Building Codes (IBC) 2006. Lohman, Russellville, St. Martins, St. Thomas, Taos, and Wardsville have passed resolutions to adopt the County's building codes; St. Martins also has some building regulations in place which go beyond the County's codes.

In order to ensure code compliance, the Planning Department of Cole County Public Works reviews building plans for construction in the unincorporated areas of the County and all jurisdictions which have adopted the County codes. In addition, the Planning Department enforces the building codes in unincorporated Cole County.

Zoning Regulations

Appropriate zoning regulations can be an effective mitigation strategy; zoning guides development in such a way as to keep the general population and property safe.

Zoning ordinances can be a tool to discourage development in areas where desired services cannot be provided in a cost-effective manner and/or the safety of citizens could be jeopardized due to the fact that the area is not readily accessible to fire protection, law enforcement, and ambulance services.

Zoning ordinances in the Planning Area exist in Jefferson City, Lohman, Russellville, St. Martins, Taos, and Wardsville. The majority of the Cole County population lives in Jefferson City and is therefore protected by that jurisdiction's zoning regulations.

Subdivision Regulations

Subdivision regulations serve to protect the public health and general welfare of the community by keeping development out of hazard prone areas. Subdivision regulations do this by providing specific guidelines that new developments must meet in order to be in compliance with safety and management decisions. Policy additions such as subdivision regulations are one of the more effective mitigation tools because they allow the community to design hazard-resistant places and avoid late costly retrofits or property buyouts.

Cole County has a subdivision ordinance that guides the construction of new subdivisions. Subdivisions built prior to the ordinance's adoption in September 1999 were not necessarily built to the specifications outlined in the ordinance.

Jefferson City, Russellville, St. Martins, Taos, and Wardsville all have subdivision regulations; Lohman and St. Thomas do not.

Storm Water Regulations

Storm water regulations, similar to other policy related mitigation strategies, can help the community design disaster resistant communities.

Jefferson City has storm water regulations in place in Chapter 31 of the City Code – Stormwater/Floodplain Management. The regulations cover permits, developments, construction requirements, easements and maintenance, interference and damage, inspection, and remedial work.

The City of Wardsville passed storm water regulations in 2004.

National Flood Insurance Program (NFIP)

The following description from FEMA describes the history of the NFIP:

"The U.S. Congress established the National Flood Insurance Program (NFIP) with the passage of the National Flood Insurance Act of 1968. The NFIP is a Federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the Federal Government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the Federal Government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods."

The jurisdictions in the Planning Area which participate in the NFIP are shown in Figure 2.9.28.

| Figure 2.9.28 | | | | | | |
|---|---------------|---------------|--|--|--|--|
| Cole County Participation in NFIP | | | | | | |
| Jurisdiction | Date of Entry | Effective Map | | | | |
| Cole County | 1/21/1982 | 12/2/2005 | | | | |
| Jefferson City | 4/15/1980 | 12/2/2005 | | | | |
| Wardsville | 12/2/2005 | 12/2/2005 | | | | |
| Source: http://www.fema.gov/fema/csb.shtm | | | | | | |

Legal Authority and Political Willpower

Cole County has at its disposal a variety of powers given to it by the State of Missouri relevant to mitigation activities. A brief review of these powers is listed below.

- **Police Powers** The police are responsible for protecting the overall public; local governments can add requirements pertinent to hazard mitigation.
- Land Use and Building Codes The State of Missouri has given local governments the right to create and enforce planning and zoning regulations around construction and development including areas within designated floodplains and subdivisions.
- Acquisition Local governments may find the most effective method for completely "hazard-proofing" a particular piece of property or area is to acquire the property (either in fee or a lesser interest, such as an easement); this removes the property from the private market and eliminates or reduces the possibility of inappropriate development. Missouri legislation empowers cities, towns, and counties to acquire property for public purpose by gift, grant, devise, bequest, exchange, purchase, lease or eminent domain.
- **Taxation** The power to levy taxes and special assessments is an important tool delegated to local governments by Missouri law. The power of taxation extends beyond the collection of revenue, and impacts the pattern of development in the community.
 - Local units of government also have the authority to levy special assessments on property owners for all or part of the costs of acquiring, constructing, reconstructing, or improving protective structures within a designated area. This can serve to increase the cost of building in such areas, thereby discouraging development. Special assessments seem to offer little in terms of control over land use in developing areas. They can, however, be used to finance the provision of necessary services within municipal or county boundaries. In addition, they are useful in distributing to the new property owners the costs of the infrastructure required by new development. The major constraint in using special assessments is political.
- Spending Local governments have the power to make expenditures in the public interest. A community can control its growth to some extent by tentatively committing itself to a timetable for the provision of capital to extend services, especially when the provision of on-site sewage disposal and water supply to the surrounding area is unusually expensive. A local community can also regulate the extension of and access to services. This tactic can help guide development away from hazard prone areas.

Political Willpower

Cole County has seen firsthand the effects of natural hazards, most notably during the flood of 1993. Citizens are well aware of the potential impacts to life and property of such events. Due to this high degree of awareness, it is expected that the current and future political climates are favorable for supporting and advancing the suggested mitigation strategies in the Planning Area.

Community and Regional Partnerships

The Cole County government has working relationships with the towns and cities located within the county as well as with neighboring counties. This is particularly evident in mutual aid agreements that exist between fire and law enforcement jurisdictions.

Cole County jurisdictions have partnered successfully through and with the Mid-MO RPC on regional transportation planning and multiple local grant applications; local governments have representation on Mid-MO RPC transportation and economic development advisory committees.

Regional Homeland Security Oversight Committee

Cole County participates in the Region F Homeland Security Oversight Committee (RHSOC). This committee addresses homeland security initiatives in a thirteen county region. A Mass Care Coordinator funded through the RHSOC has worked to increase the number of shelters throughout the region. In addition, there are three Homeland Security Response Teams available for emergency response incidents, both manmade and natural.

Non-Governmental and Volunteer Organizations

After the floods in 1993 the non-profit agencies in Missouri organized the **Missouri Volunteers Against Disaster (MOVOAD).** The main goal of MOVOAD is to increase cooperation, coordination, communication, education, and to pass local, county and state disaster legislation. Their mission is to bring together National Voluntary Organizations Active in Disaster to foster more effective service through mitigation and response for the benefit of people affected (imperiled and impacted) by disaster through:

- 1. Cooperation: To create a climate of cooperation at all levels (including grass roots) to provide information.
- 2. Coordination: To coordinate policy among member organizations and to serve as a liaison, advocate and national voice.
- 3. Communication: To disseminate information through the newsletter, the director, research and demonstration, case study and critique.
- 4. Education: To increase mutual awareness and understanding of each organization.
- 5. Convention Mechanisms: To arrange for such meetings and conferences as necessary to accomplish the purpose of MOVOAD.
- 6. Legislation: To encourage effective disaster relief legislation and policy.

Organizations in Cole County such as the American Red Cross, church agencies, and other non-profits are active in supporting the work of MOVOAD. This collaborative effort ensures that Cole County non-profits are well prepared to respond to a natural disaster. Through their legislative efforts, they also work to help make Missouri and Cole County as disaster resistant as possible.

Media

The ability to distribute timely and reliable information to the public in the event of an emergency is vital. The nationwide Emergency Alert System (EAS), jointly coordinated by the Federal Communications Commission (FCC), FEMA, and the NWS, provides a link between the government agencies monitoring potential hazards/emergencies and local broadcasters who can inform the public in a timely manner. The Planning Area is located in the Central Missouri EAS Operational Area.

Local media outlets can also provide avenues for educating the public about emergency preparedness and the need for certain mitigation actions. The media points of contact as indicated in the Cole County/City of Jefferson Emergency Operations Plan are shown in Figure 2.9.29.

| Figure 2.9.29 Media Points of Contact | | | | | |
|--|-------------------------------|-------------------------------------|--|--|--|
| Radio Stations | Frequency | Location | | | |
| KJLU | 88.9 FM | Jefferson City (Lincoln University) | | | |
| KATI | 94.3 FM | Jefferson City | | | |
| KJMO | 101.1 FM | Jefferson City | | | |
| KPLA | 101.5 FM | Jefferson City | | | |
| KTXY* | 106.9 FM | Jefferson City | | | |
| KWOS** | 950 AM | Jefferson City | | | |
| KLIK | 1240 AM | Jefferson City | | | |
| Learfield Communications | | Jefferson City | | | |
| TV Station | Channel | Base City | | | |
| KRCG (CBS) | 13 | Jefferson City | | | |
| KOMU (NBC) | 8 | Columbia (Boone County) | | | |
| KMIZ (ABC) | 17 | Columbia (Boone County) | | | |
| KNLJ | 25 | New Bloomfield (Callaway County) | | | |
| JCTV (City of Jefferson Access TV) | | Jefferson City (Lincoln University) | | | |
| Mediacom | Cable | Jefferson City | | | |
| Sudden Link Cable | Cable | | | | |
| Galaxy Cable | Cable | | | | |
| Newspaper | | | | | |
| Jefferson City News Tribune Jefferson City | | | | | |
| St. Louis Post Communications | Jefferson City (local bureau) | | | | |
| Kansas City Star | Jefferson City (local bureau) | | | | |
| * LP1 - Primary Emergency Alert System (EAS) station ** Secondary EAS station; has emergency power and redundant facilities Source: Cole County/City of Jefferson Emergency Operations Plan, 2008 | | | | | |

Weather Radio

The Planning Area is within range of broadcasts of the NOAA Weather Radio network, operated by the National Weather Service (NWS). Transmitters and towers are located in Fulton (Callaway County) and Jamestown (Moniteau County). Special radio units which receive this transmission can be purchased from many local retail stores. Severe weather updates, flash flood warnings, and other 24-hour weather advisories from the NWS are broadcast over the network.

Missouri Uniform Law Enforcement System (MULES)

MULES is a law enforcement computer data network operated by the Missouri Highway Patrol primarily for law enforcement operations. It is also used to disseminate information emergency information such as weather conditions, flood stages, and road conditions. A MULES terminal is located in the City of Jefferson/Cole County E-911 communications center.

Section 3: Risk Assessment

Methodology

Risk assessment is a process of estimating the potential for injury, death, property damage, or economic loss which may result from a hazard. A risk assessment is only as valuable as the thoroughness and accuracy of the information on which it is based. The Risk Assessment for the Planning Area is comprised of the following:

- Identification of Hazards
- Profiling of Hazards
- Inventory of Assets
- Assessment of Vulnerability

Identification of Hazards

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

The following natural hazards have been identified as posing potential risk in the Planning Area:

- Dam Failure
- Drought
- Earthquake
- Extreme Heat
- Flood (includes riverine flooding, flash flooding, and storm water flooding)
- Levee Failure
- Land Subsidence/Sinkhole
- Severe Winter Weather (Snow, Ice, and Extreme Cold)
- Wildfire
- Windstorm
- Tornado
- Hailstorm

The Missouri State Hazard Mitigation Plan (2010) indicates that expansive soils, landslides, and rockfalls are recognized as hazards in Missouri but occur infrequently and with minimal impact. For this reason, those hazards were not profiled in the state plan nor will they be profiled in the Cole County Plan.

There are certain other natural hazards which FEMA requires to be addressed in Hazard Mitigation Plans if they are applicable to the Planning Area. Avalanches and volcanoes have not been included in this plan as they do not pose a threat due to the Planning Area's topography and geology. Coastal erosion, coastal storms, hurricanes, and tsunamis do not pose a threat due to its inland location.

Profiling of Hazards

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 of the natural hazards identified as posing a risk to the Planning Area has been studied and analyzed; this information has been organized in the following way for each hazard profile (Sections 3.1-3.10):

- Description of Hazard
- Geographic location
- Previous occurrences
- Measures of Probability and Severity
- Existing mitigation strategies

The assessments of probability and severity included in each profile were based on the following definitions from the Missouri State Hazard Mitigation Plan (2010):

Measure of Probability – The likelihood that the hazard will occur.

- Low The hazard has little or no chance of happening (less than 1 percent chance of occurrence in any given year)
- Moderate The hazard has a reasonable probability of occurring (between 1 and 10 percent chance of occurrence in any given year).
- High The probability is considered sufficiently high to assume that the event will occur (between 10 and 100 percent chance of occurrence in any given year).

Measure of Severity – The deaths, injuries, or damage (property or environmental) that could result from the hazard.

- Low Few or minor damage or injuries are likely; death is possible, but not likely.
- Moderate Injuries to personnel and damage to property and the environment is expected; death is possible.
- High Major injuries/death and/or major damage will likely occur

Inventory of Assets

An inventory of the assets in the Planning Area is included in Section 2.9.

Vulnerability Assessment

| 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 area |
|---|--|
| 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 $(c)(2)(11)(A)$ 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. |

An assessment of structures, equipment, and populations in the Planning Area which are vulnerable to a specific hazard is included after each hazard profile in Sections 3.1-3.10. As prescribed by FEMA guidelines, critical structures, building counts, and assessed values are included. All people, structures, and equipment are vulnerable to one or more hazards in the Planning Area. This assessment can be used to identify potential areas where mitigation activities are needed.

Impact on future development is not addressed with every hazard because of the unpredictable nature of some hazards.

Overview of Vulnerability

[The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this Requirement $\S 201.6(c)(2)(ii)$: section. This description shall include an overall summary of each hazard and its impact on the community. For multi-jurisdictional plans, the risk assessment must assess each Requirement

 $\S 201.6(c)(2)(iii)$:

jurisdiction's risks where they vary from the risks facing the entire planning area.

Vulnerability is defined by FEMA as the extent to which people will experience harm and/or property will be damaged from a hazard. Vulnerability is closely linked to the probability that the hazard event will occur (Measure of Probability) and to the severity which is expected (Measure of Severity.

For each identified hazard, a Vulnerability Rating was determined for the Planning Area as a whole and for each participating jurisdiction. These Vulnerability Ratings were based upon the previously determined Measures of Probability and Severity in the following manner:

- Numeric values were assigned to the Measures of Probability and Severity and the Vulnerability Rating Scale in the following manner: Low = 1, Moderate = 2, High = 3
- For each hazard in each jurisdiction, the corresponding Measure of Probability and Measure of Severity were averaged. If necessary, the average was rounded up to a whole
- The appropriate Vulnerability Rating was assigned based on the calculated numeric average of the Measures of Probability and Severity.

The following Vulnerability Rating Scale description was developed to be compatible with the Measures of Probability and Severity from which the Vulnerability Ratings are derived.

| Rating | Property Damage | Injury or Death |
|--------|-----------------|------------------------------------|
| NA | not applicable | not applicable |
| L | 0-5% | little or none |
| M | 5-10% | injuries and/or death possible |
| Н | 10-100% | major injuries and/or death likely |

The vulnerability ratings for each of the identified hazards are shown in Figure 3.0.1. The Planning Area as a whole received a rating for each hazard and individual ratings were assigned for each participating jurisdiction. When the rating for a participating jurisdiction varies from the overall vulnerability of the Planning Area, the rating is highlighted in yellow. A complete chart showing Measures of Probability and Severity and Vulnerability Ratings for each jurisdiction is included in Appendix G.

| Figure 3.0.1 Participating Jurisdictions' Vulnerability | | | | | | | | | | | | |
|---|---|---|---------------------------|-----------------|-----------------------|---------|------------------------------------|----------------|---|---|---|---|
| Rating | Property Damage | | | Injury or Death | | | | | | | | |
| | | n | ot app | olicabl | e | | | not applicable | | | | |
| L | | | 0-5 | 5% | | | | little or none | | | | |
| M | | | 5-1 | 0% | | | injuries and/or death possible | | | | | |
| Н | | | 10-1 | 00% | | | major injuries and/or death likely | | | | | |
| Jurisdiction | Dam Failure Drought Earthquake Extreme Heat Flood Hailstorm | | Land Subsidence/ Sinkhole | Levee Failure | Severe Winter Weather | Tornado | Wildfire | Windstorm | | | | |
| Planning Area | M | M | M | M | Н | Н | L | M | M | Н | M | Н |
| Cole County (unincorporated areas) | M | M | M | M | Н | Н | L | M | M | Н | M | Н |
| Jefferson City | M | L | M | M | Н | Н | | M | M | Н | M | Н |
| Lohman | | L | M | M | Н | Н | | | M | Н | L | Н |
| Russellville | | L | M | M | L | Н | | | M | Н | L | Н |
| St. Martins | | L | M | M | Н | Н | | | M | Н | M | Н |
| St. Thomas | | L | M | M | L | Н | | | M | Н | M | Н |
| Taos | M | L | M | M | Н | Н | | | M | Н | L | Н |
| Wardsville | M | L | M | M | Н | Н | | | M | Н | L | Н |
| Cole County R-V School District | | L | M | M | L | Н | | | M | Н | M | Н |
| Jefferson City School District | | L | M | M | L | Н | | | M | Н | M | Н |
| Lincoln University | | L | M | M | L | Н | | | M | Н | M | Н |

Note: Windstorm, Tornado, and Hailstorm are profiled as separate hazards but included together in section 3.10 because of their common connection in the Planning Area.

3.1 Dam Failure

Description of Hazard

A dam is defined by the National Dam Safety Act as an artificial barrier which impounds or diverts water and: (1) is more than 6 feet high and stores 50 acre feet or more, or (2) is 25 feet or more high and stores more than 15 acre feet. Based on this definition, there are over 80,000 dams in the United States. Over 95% are non-federal, with most being owned by state governments, municipalities, watershed districts, industries, lake associations, land developers, and private citizens. Dam owners have primary responsibility for the safe design, operation and maintenance of their dams. They also have responsibility for providing early warning of problems at the dam, developing an effective emergency action plan, and coordinating that plan with local officials. The State has ultimate responsibility for public safety; many states regulate construction, modification, maintenance, and operation of dams and also ensure a dam safety program.

Dams can fail for many reasons. The most common are:

- **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.

These three types of failures are often interrelated. For example, surface or internal erosion may weaken the dam or lead to structural failure. Similarly a structural failure may shorten the seepage path and lead to a piping failure.

Dam construction varies widely throughout the state. A majority of dams are of earthen construction. Missouri's mining industry has produced numerous tailing dams for the surface disposal of mine waste. These dams are made from mining material deposited in slurry form in an impoundment. Other types of earthen dams are reinforced with a core of concrete and/or asphalt. The largest dams in the state are built of reinforced concrete and used for hydroelectric power.

Dam Hazard Classification

Dams pose a hazard to human life and property through faulty operation and outright failure. Dams in Missouri have been classified by both federal and state systems according to the potential hazard posed by failure.

The **federal classification system** is based upon the probable loss of human life and the impact on economic, environmental and lifeline interests from dam failure. It should be noted that there is always the possibility of loss of human life when a dam fails; this classification system does

not account for the possibility of people occasionally passing through an inundation area which is usually unoccupied (e.g. occasional recreational users, daytime user of downstream lands, etc.)

The **state classification system** is based upon the type and number of structures downstream from a dam. An inventory of all the dams of the state was done in the late 1970s and early 1980s, according to Glenn Lloyd, Civil Engineer and Dam Safety Inspector with the Dam Safety Program of the MO Department of Natural Resources (DNR). All of the known dams were classified by the state at that time.

Dam Regulation in Missouri

According to the Association of State Dam Safety Officials, 5206 dams in Missouri have been classified and only 653 are regulated by the state. Pursuant to Chapter 236 of the Revised Statutes of Missouri, a dam must be 35 feet or higher to be state regulated; regulation makes a dam subject to permit and inspection requirements. For regulated dams, the state classification system dictates the required inspection cycle.

The inspection cycle for regulated dams allows for a regulated dam's classification to be updated when appropriate. Classification is a dynamic system; development can easily change the situation downstream. A regulated dam in Missouri would have its classification appraised at least once every 5 years.

One must use caution in assuming the classifications of unregulated dams are currently accurate. It is very probable that, for most of the unregulated dams, the classification does not take into account almost 30 years of development and change in Cole County.

In addition, the DNR database of dams in Missouri reflects only the known dams; a dam less than 35 feet in height which was built since the inventory was taken some 30 years ago may not appear in the database.

A summary of the federal and state classification systems, how the two systems relate to each other, and inspection requirements for regulated dams is shown in Figure 3.1.1.

| Fig. 3.1.1 | Dam Hazard Classification Systems | | | | | | |
|---------------------------|--|-------------------------|--|--|--|--|--|
| Federal Classification | Federal Criterion | State Classification | Downstream Environment | Inspection Requirement (Regulated Dams) | | | |
| | | Class 1 | 10 or more permanent dwellings; or any public building | Every 2 years | | | |
| High hazard | Probable loss of human life | Class 2 | 1-9 permanent dwellings; or 1 or more campgrounds with permanent water, sewer and electrical services; or one or more industrial buildings | Every 3 years | | | |
| Significant hazard | No probable loss of human life but potential economic loss, environmental damage, disruption of lifeline facilities or other impact of concern | Class 3 | Everything else | Every 5 years | | | |
| Low hazard | No probable loss of human life; low economic and/or environmental loss; loss principally limited to owner's property | | | | | | |

Sources: Federal Guidelines for Dam Safety, Hazard Potential Classification System for Dams, April 2004, http://www.fema.gov/library/viewRecord.do?id=1830; http://www.sos.mo.gov/adrules/csr/current/10csr/10c22-2.pdf; Glenn Lloyd, Civil Engineer/Dam Safety Inspector, MO DNR, Water Resources Center, Dam Safety Program

There are currently 33 dams in Cole County according to the Department of Natural Resources database. Of these, only 8 are regulated by the state (see Figure 3.1.2).

| Figure 3.1.2 | | | | | | |
|---------------------------------------|----------------|---------------------|--------------------|-----------------------------|--|--|
| Hazard Categories of Cole County Dams | | | | | | |
| Hazard Category | Regulated Dams | Unregulated Dams | All County Dams | Percentage of Total Dams | | |
| High | 7 | 15 | 22 | 67% | | |
| Significant | 0 | 0 | 0 | 0% | | |
| Low | 1 | 10 | 11 | 33% | | |
| Total | 8 | 25 | 33 | 100% | | |

Specific information for each of the 8 regulated dams and 25 unregulated dams can be found in Appendix H. It must be remembered that, according to information from Missouri DNR, much of this data, perhaps most of it, for the unregulated dams has not been updated since the dam survey was first conducted in the late 1970s and early 1980s. The heights of the unregulated dams may be, in some cases, the only currently reliable information.

Geographic Location

The dams in the Planning Area are located in unincorporated Cole County, Jefferson City, and Taos (see Figure 3.1.3). The dams located within the jurisdictions of Jefferson City and Taos are shown in Figures 3.1.4-3.1.5.

In addition to the dams located within the Planning Area, areas lying in the Osage River floodplain (the unincorporated area of Osage City, other portions of unincorporated Cole County, and portions of Taos and Wardsville) are vulnerable to dam failure stemming from Bagnell Dam. Bagnell Dam is located 82 miles upstream from the confluence of the Osage and Missouri Rivers. More information about Bagnell Dam can be found in the *Dam Failure Vulnerability* portion of this profile.

Dam failure is not an issue for Lohman, Russellville, St. Martins, St. Thomas, Cole County R-V School District, Jefferson City Public School District, and Lincoln University. Even though the Jefferson City Public School District and Lincoln University are within Jefferson City where there are dams, the structures of these educational institutions are not within the projected inundation areas of the dams.

Figure 3.1.3

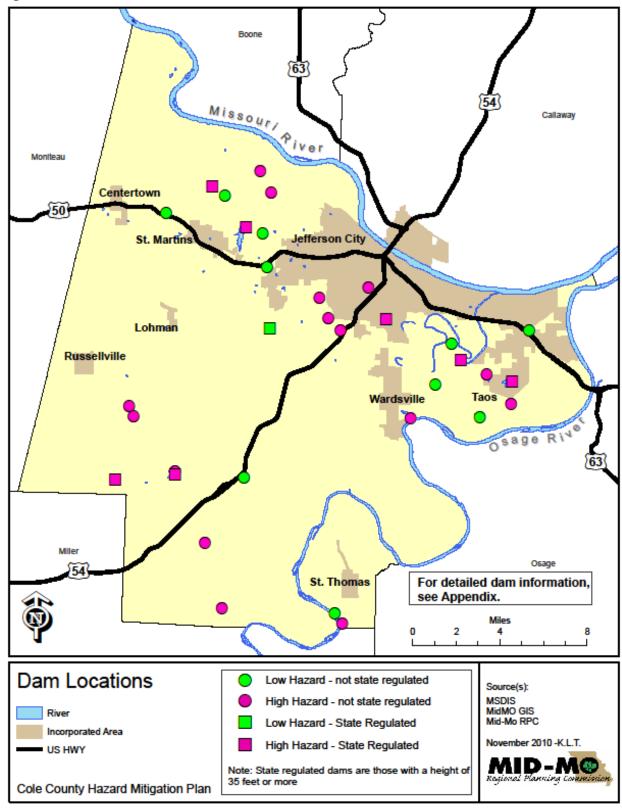


Figure 3.1.4

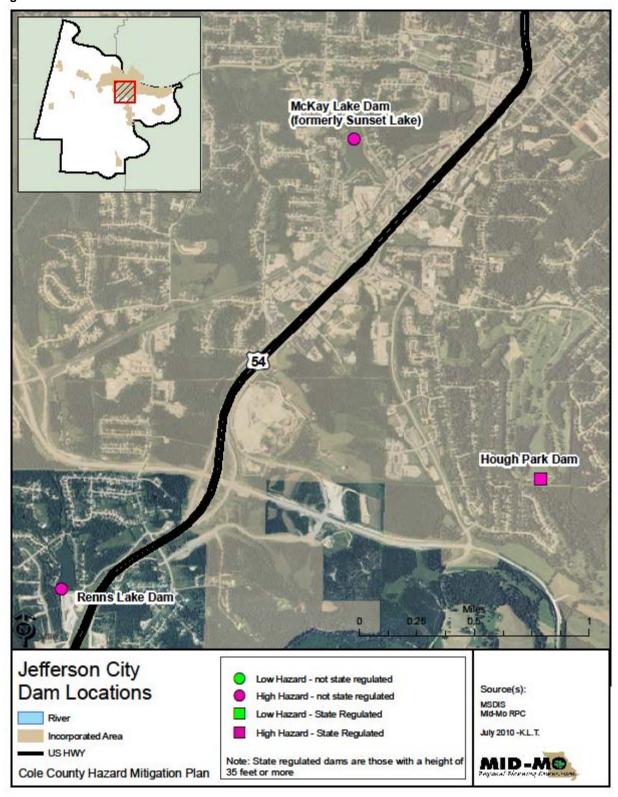
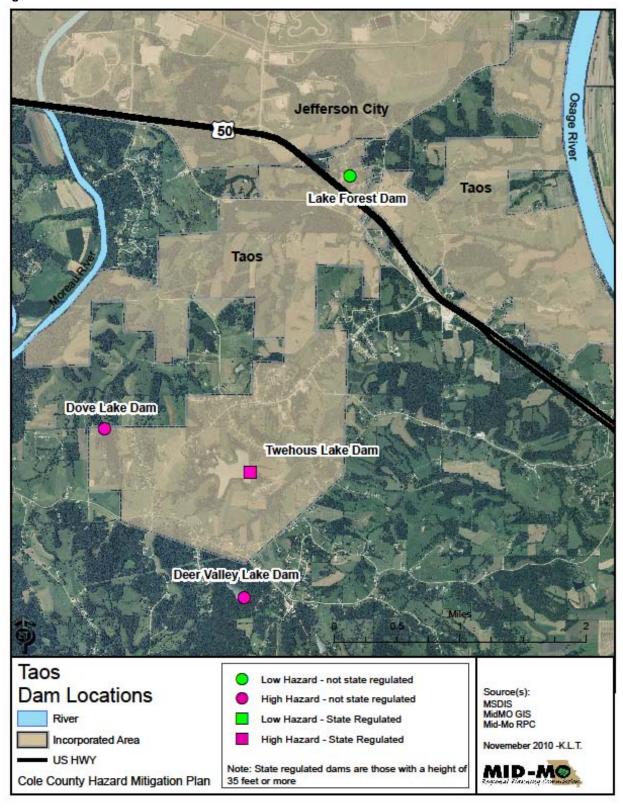


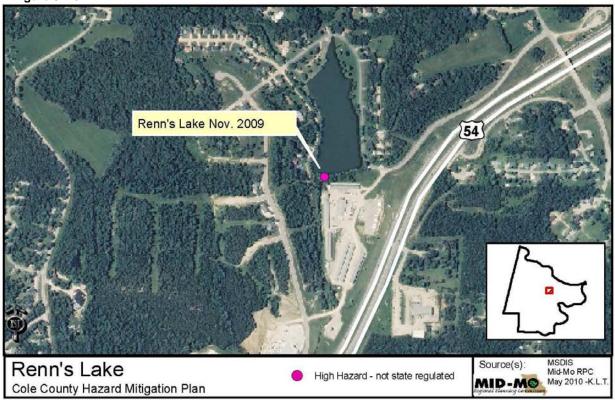
Figure 3.1.5



Previous Occurrences

The serious issue of dam failure was highlighted for Cole County in 2009 with the near failure of Renn's Lake Dam, located to the south of Jefferson City (see Figure 3.1.6). The 30-foot dam, built in 1950, had been weakened by the growth of trees and heavy rainfall had caused a 15-foot section to erode. Since the dam was less than 35 feet, it was unregulated and thus not inspected by the state. Emergency crews and volunteers worked for several days in late October and early November to relieve pressure on the earthen dam by pumping thousands of gallons of water from 7-acre Renn's Lake.

Figure 3.1.6



Renn's Lake is located immediately to the west of U.S. Highway 54; the potential dam failure threatened the highway. The Missouri Department of Transportation (MoDOT) was put on alert so the highway could be shut down quickly if necessary.

The deed to Renn Lake was subsequently transferred from the Renn family to Cole County; the County breached the dam and drained the lake.

A year previous to this near failure, neighboring Boone County experienced its first known dam failure in March 2008. Moon Valley Lake Dam in Columbia, an 18 foot high unregulated dam, had been built in 1964; it drained 2,100 acres and had a 13 acre reservoir according to the DNR database.

Moon Valley Lake Dam was classified as high hazard according to the federal classification system; however, there was no loss of life with the dam failure. This may be partially attributable to the fact that Moon Valley Lake was silted in and the main release from the dam failure was silt. Silt from the lake went down the Hominy Branch into the Hinkson Creek. The added silt has caused greater flooding problems on the Hinkson Creek since the time of the dam failure. The City of Columbia estimated the cost of removing the sediment and stabilizing about 2,000 feet of the stream bank to be in the vicinity of \$400,000.

The threat posed by these two dams in central Missouri within two years has highlighted this potential hazard in the region.

Cole and Boone Counties are not the only counties in Missouri to experience dam problems. The Stanford University's National Performance of Dams Program documented 17 dam failures in Missouri between 1975 and 2001, according to the Missouri State Hazard Mitigation Plan (2010).

One especially notable dam failure in the state destroyed Johnson Shut-Ins State Park (Reynolds County) in 2005. On December 14, the AmerenUE's Taum Sauk reservoir dam at their hydroelectric complex failed; 1.5 billion gallons of water were released into the park in 10 minutes. There was no loss of life, even though the superintendent's family was swept out of their home. However, if this failure had occurred during the summer when the popular park has many visitors, it could have resulted in a catastrophic loss of life.

All of these incidents indicate that dam failure is a serious problem which needs attention. Missouri has more manmade dams than any other state, according to the Missouri State Hazard Mitigation Plan (2010). Many of Missouri's smaller dams are becoming a greater hazard as they continue to age and deteriorate. Hundreds of these dams need to be rehabilitated but lack of available funding, and often questions of ownership, loom as difficult obstacles to overcome.

Measure of Probability and Severity

Probability: Low Severity: Moderate

Twenty-two (22) dams in Cole County are considered to pose high hazard should there be a dam break. Fifteen (15) of these high hazard dams are not regulated by the state and thus not subject to inspection requirements.

Existing Mitigation Strategies

State regulated dams are inspected, according to classification, through the Dam Safety Program of the DNR.

Cole County is prepared, through its Public Works Department and Emergency Management Coordinator, to send a monitoring team to a potential dam failure site; this monitoring occurred during the near failure of Renn's Lake Dam.

Dam Failure Vulnerability

Jurisdictions: Cole County (unincorporated areas), Jefferson City, Taos, Wardsville

Cole County R-V School District, Jefferson City Public Schools, and Lincoln University are not vulnerable to the hazard of dam failure.

Overview

Most of the dams in the Planning Area are located in unincorporated Cole County. The results of a dam failure could range from very minimal environmental damage to a significant loss of life and infrastructure. All impacts are dependent upon several variables: water, debris, people, and structures. A dam failure would include the breach of a dam wall or embankment allowing the water and/or debris to flow downstream from the dam.

The Dam inventory for the state of Missouri was compiled in the late 1970's to early 1980's. The state has classified 22 of Cole County's dams as "High Hazard". Of the 22 High Hazard dams in Cole County, 15 are unregulated. Only four of those 15 unregulated dams have ever been documented as having been inspected; according to data provided by the Missouri Department of Natural Resources, those inspections occurred between 1978 and 1981. This presents two main problems. First, it has been nearly 20 years since those unregulated High Hazard dams have been inspected, not counting the ones that were never inspected. Second, because these are *unregulated* dams, the state has no jurisdiction over maintenance. These two issues lead to the overall problem of dam location and development downstream.

State regulated dams are classified by what lies downstream of the dam and what will be impacted by the failure of that dam. Unregulated dams received their classifications nearly 30 years ago or more and development that occurs downstream is not monitored by any agency; this potentially puts the public at risk. Also, development upstream that might increase the contents held by the dam can cause failure. Because there is no entity in charge of unregulated dams, the original classifications for these dams may not be correct. Some dams may not exist anymore while others may pose a greater downstream threat than their classifications indicate.

It should be noted that changes have been made to two dams (McKay Park Lake Dam and Renn's Lake Dam) since they were last updated in the state database.

McKay Park Lake Dam (formerly Sunset Lake Dam) in Jefferson City is listed as an unregulated High Hazard dam, but was completely drained and rebuilt in the 1980's, according to Jefferson City Parks and Recreation staff. The lake is currently owned by Jefferson City who drained and rebuilt the lake for storm water storage and public recreation. These details have not been updated in the state database.

Renn's Lake Dam is now currently owned by Cole County. The dam nearly failed in 2009 following heavy rains. The County subsequently breached the dam and drained the lake; plans for the area are uncertain at this time.

Potential Impact on Existing Structures

Jefferson City and Taos have dams inside, or within a mile upstream of, their corporate boundaries. Depending on the size of the reservoir behind the dam, structures downstream of these dam locations could potentially be at risk if a failure were to occur.

Throughout the county several other dams lie upstream of structures that have the potential of being impacted. Existing structures in the jurisdictions of Taos, Wardsville, and portions of unincorporated Cole County that lie along the Osage River are vulnerable to the effects of dam failure stemming from a failure of Bagnell Dam.

The potential impact on structures and human life downstream from a dam failure directly correlates to the amount of water and/or debris that is behind and downstream of the dam. As stated in the hazard profile, it is important to take into account the age of the data that has been compiled on state regulated and unregulated dams in the county and in the state. Because data on unregulated dams was collected in the late 1970's and early 1980's it is not necessarily reliable to use when looking at possible areas of impact.

Figures 3.1.7 - 3.1.17 depict the downstream areas and parcels that are within a half mile of the high hazard dams in the Planning Area. All figures were created using the same scale. Because inundation information is not available at this time it is not possible to know exactly the severity or distance of a dam failure.

Figure 3.1.7

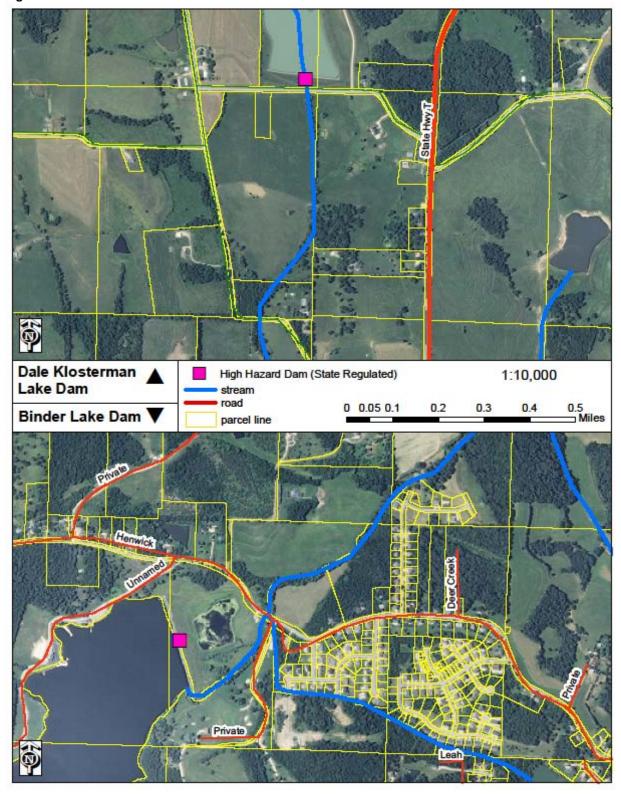


Figure 3.1.8

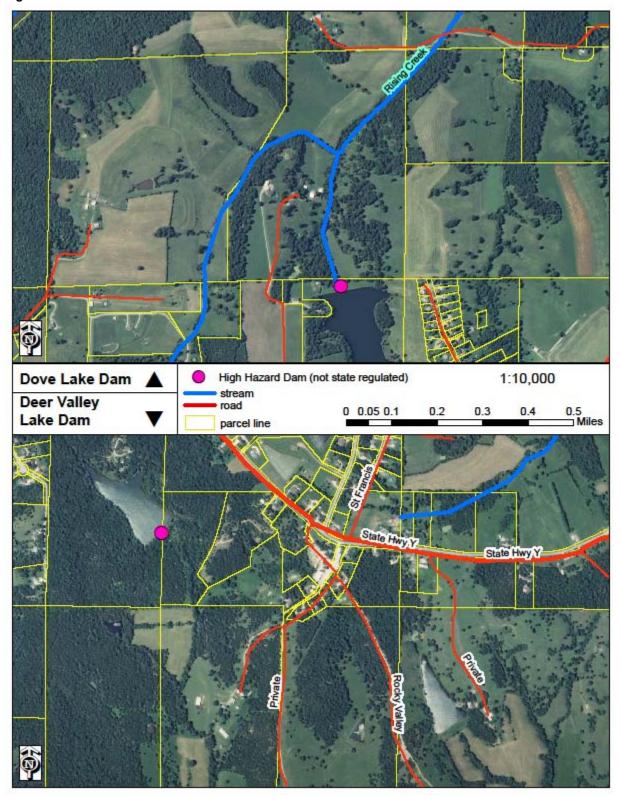


Figure 3.1.9

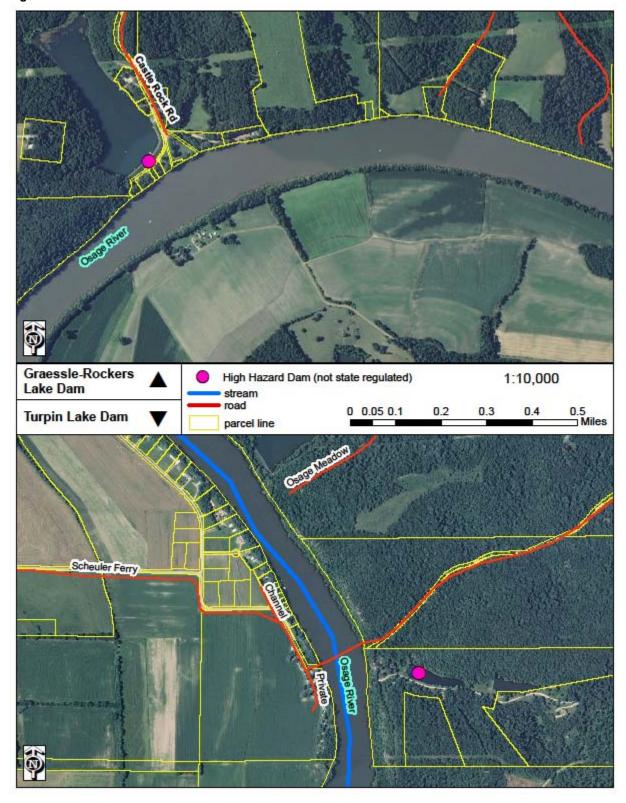


Figure 3.1.10

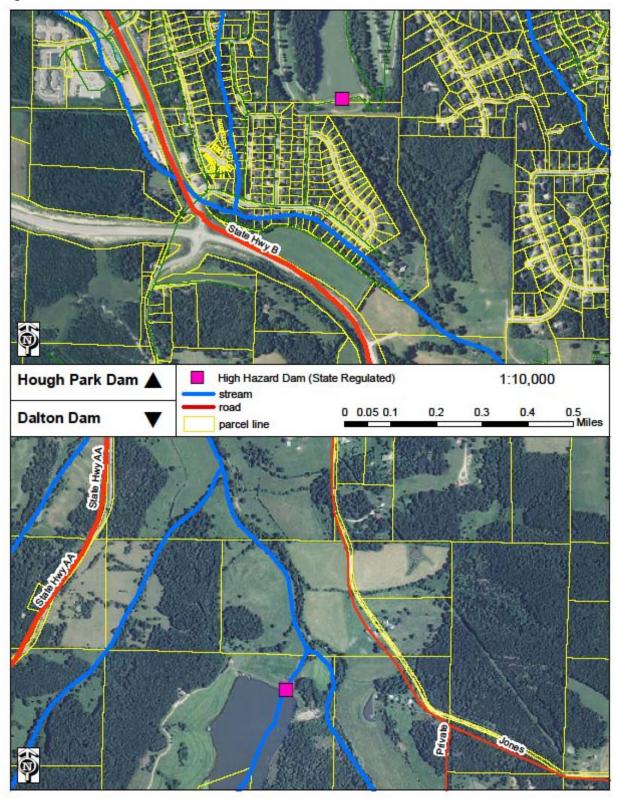


Figure 3.1.11

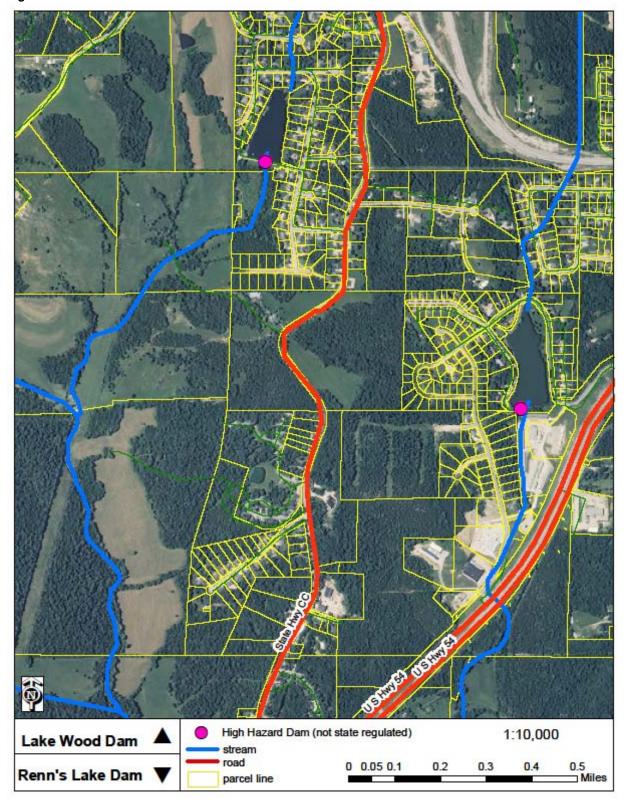


Figure 3.1.12

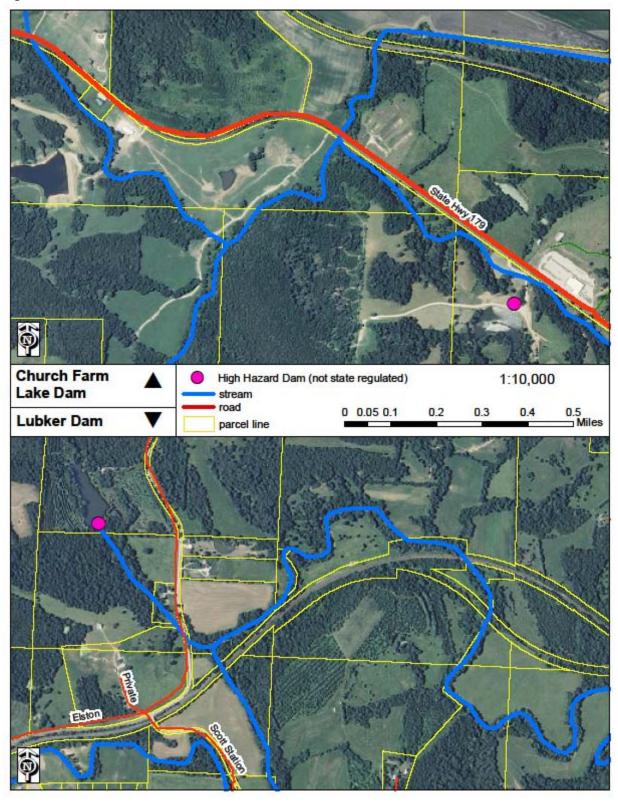


Figure 3.1.13

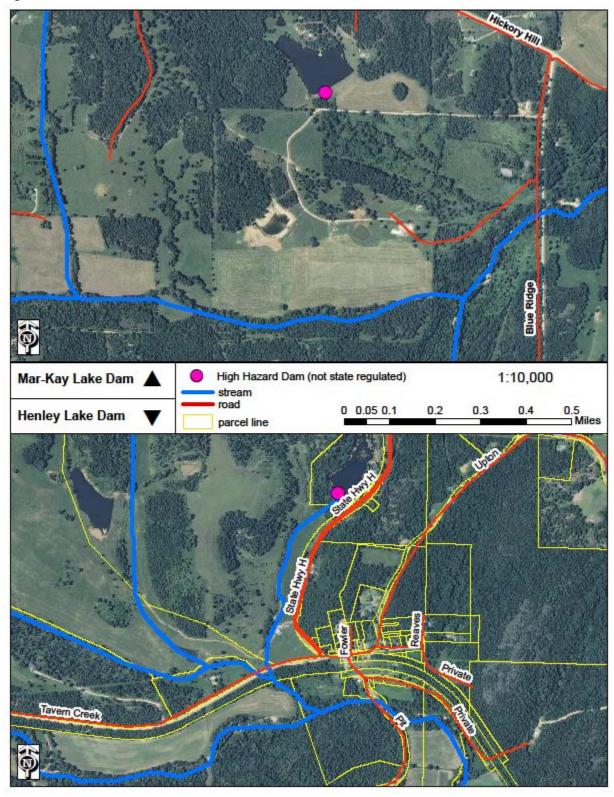


Figure 3.1.14

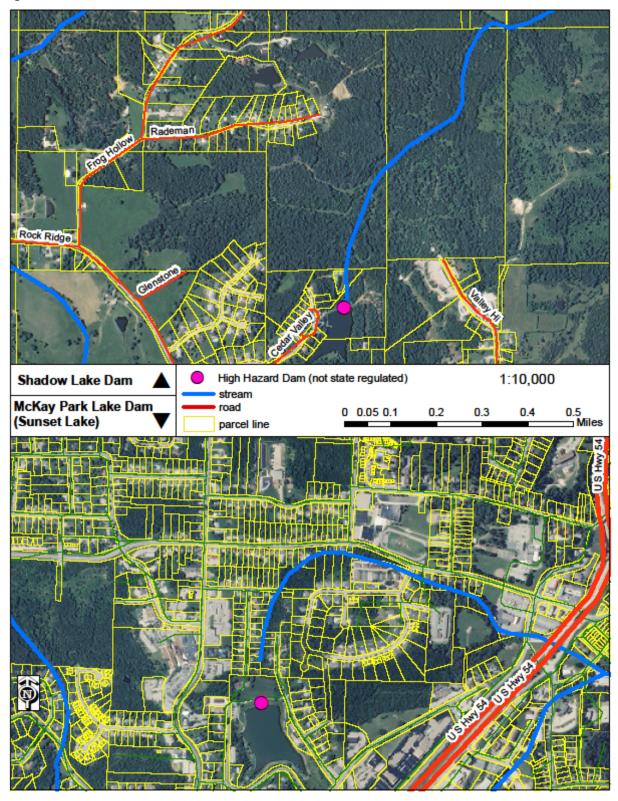


Figure 3.1.15

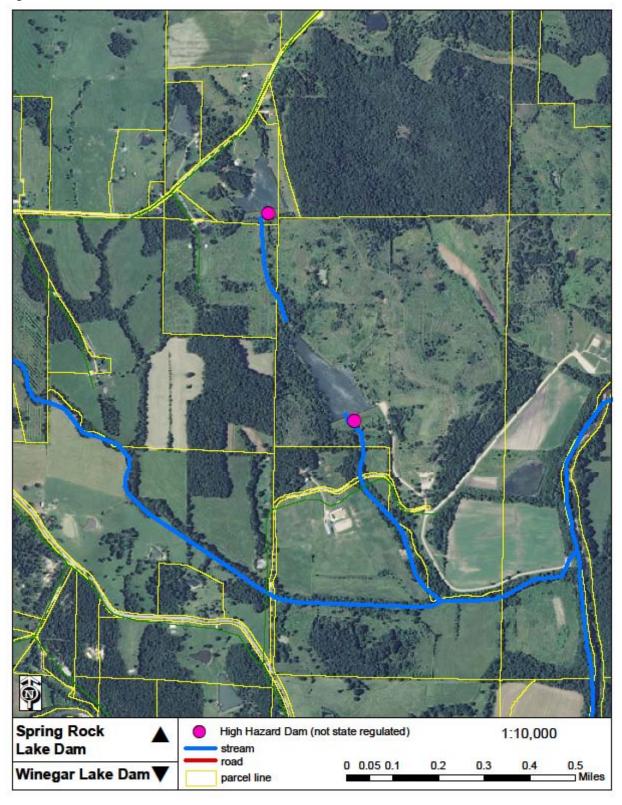


Figure 3.1.16

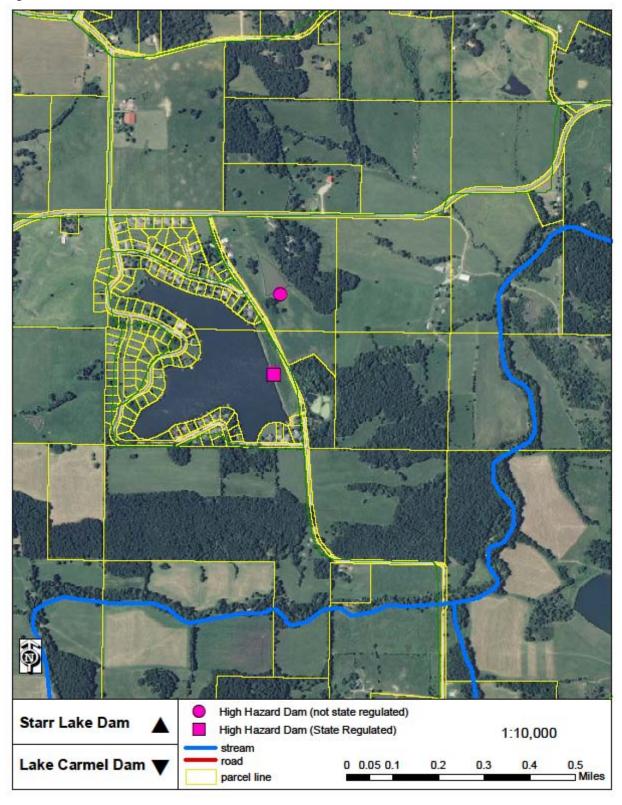
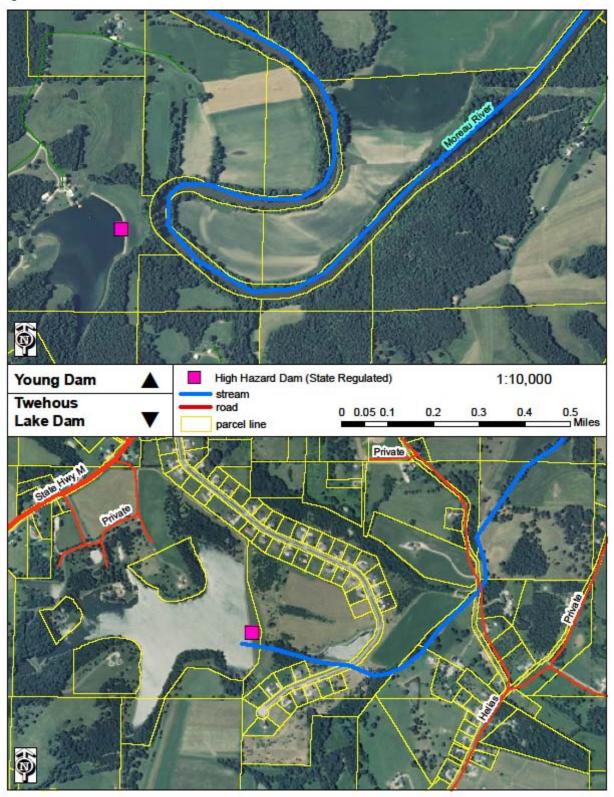


Figure 3.1.17



Bagnell Dam

In addition to the above mentioned areas of impact, areas along the Osage River floodplain (the unincorporated area of Osage City, other portions of unincorporated Cole County, and portions of Taos and Wardsville) are vulnerable to dam failure stemming from Bagnell Dam. According to the Miller County Museum, Bagnell Dam was constructed between 1929 and 1931. It is located 82 miles upstream from the confluence of the Osage and Missouri Rivers and impounds the Lake of the Ozarks Reservoir (see Figure 3.1.18). The Lake of the Ozarks reservoir holds approximately 86.4 billion cubic feet of water and has a total drainage area of 2,500 square miles.

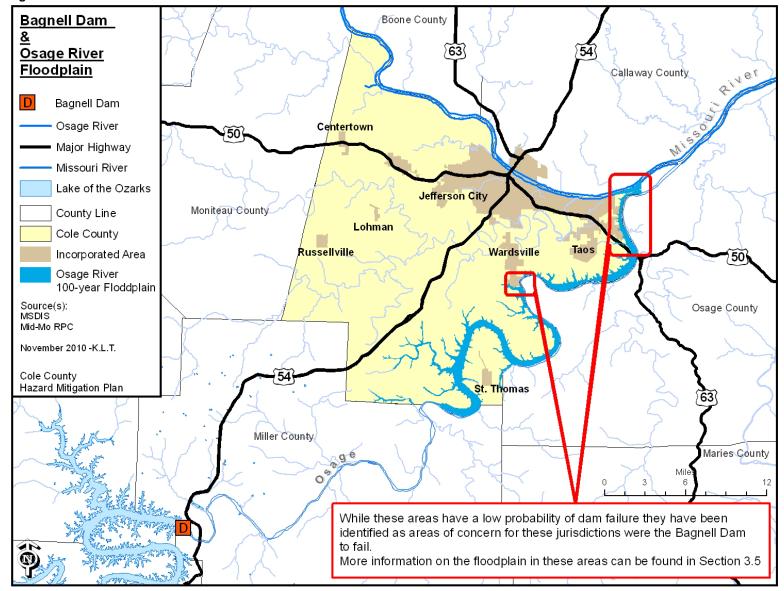
Currently the dam is owned and operated by the Ameren UE Osage Power Plant. Ameren UE maintains an EAP (Emergency Action Plan) for Bagnell Dam in coordination with local and state authorities. The EAP outlines three levels of emergency conditions that may pose a threat to the dam and/or the surrounding area:

Condition A: Failure is Imminent or Has Occurred Condition B: Potential Failure Situation Developing Condition C: Non-Failure Emergency Condition

Emergency Conditions for Harry S. Truman Dam are also taken into account in this EAP. Truman Dam lies 93 miles upstream and its failure has the potential to significantly impact Bagnell Dam.

The Bagnell Dam EAP contains inundation studies for all downstream areas that could be affected by a failure. The EAP is reviewed annually and key agencies and personnel are given updated copies. For more information regarding the *Bagnell Dam EAP Osage Project No. 459* contact the Ameren UE, Osage Power Plant in Lake Ozark, MO at 573-365-9320.

Figure 3.1.18



Potential Impact on Future Development

Dam Failure has the potential to impact future development in the county and its jurisdictions. Because many dams in Cole County are privately owned and not regulated by the state the potential for development below aging or unsafe dams is an issue that needs to be addressed. If development occurs without knowledge of a problem dam that may lie upstream, that development is put in jeopardy.

Future impacts may be addressed by inundation studies being done by the Natural Resources Conservation Service's Water Resources Center. The following is an excerpt from their website:

"The Water Resources Center has developed a methodology to complete dam breach inundation studies and produce inundation maps downstream of regulated dams.

The Federal Emergency Management Agency (FEMA) has indicated that future funding of state dam safety programs will be linked to the completion of Emergency Action Plans (EAPs) for regulated dams. The WRC's Dam and Reservoir Safety program has prioritized Missouri counties for completion of mapping."

This mapping was begun in Missouri in September 2009; the timeframe for mapping all the regulated high hazards dams in the state is a little over three years. After an inundation study on a dam is finished, it will be the responsibility of the dam owner to work with the County Emergency Management Director in developing an Emergency Action Plan for the dam.

3.2 Drought

Description of Hazard

The National Weather Service defines a drought as "a period of abnormally dry weather which persists long enough to produce a serious hydrologic imbalance (for example crop damage, water supply shortage, etc.) The severity of the drought depends upon the degree of moisture deficiency, and the duration and the size of the affected area."

Droughts occur either through a lack of precipitation (supply droughts) or overuse of water (water use droughts). Supply droughts are natural phenomenon associated with lower than normal precipitation. Water use droughts are when the uses of water by humans outpace what the surrounding environment can naturally support. Water use droughts can theoretically happen anywhere but are generally seen in arid climates, not humid places such as Missouri. At the present time, Missouri is most vulnerable to supply droughts brought on by a lack of precipitation.

The period of lack of precipitation needed to produce a supply drought will vary between regions and the particular manifestations of a drought are influenced by many factors. As an aid to analysis and discussion, the research literature has defined different categories of drought (see Figure 3.2.1).

| Figure 3.2.1 | | | | | | |
|--|---|--|--|--|--|--|
| Drought Categories | | | | | | |
| Agricultural drought | Defined by soil moisture deficiencies | | | | | |
| Hydrological drought | Defined by declining surface and groundwater supplies | | | | | |
| Meteorological drought | Defined by precipitation deficiencies | | | | | |
| Hydrological drought and land use | Defined as meteorological drought in one area that has hydrological impacts in another area | | | | | |
| Socioeconomic drought | Defined as drought impacting supply and demand of some economic commodity | | | | | |
| Source: "Missouri Drought Plan," Missouri Department of Natural Resources – Geological Survey and Resource Assessment, Water Resources Report No. 69, 2002 | | | | | | |

The most common type of drought in Mid-Missouri is the agricultural drought which happens on average every five years. Widespread crop damage, particularly to corn, is associated with agricultural drought in Missouri. The socioeconomic consequences of a drought can reach far beyond those immediately damaged.

Measuring Drought

Droughts vary in severity. Numerous indices have been developed to measure drought severity; each tool has its strengths and weaknesses.

One of the oldest and most widely used indices is the Palmer Drought Severity Index (PDSI, see Figure 3.2.2), which is published jointly by NOAA and the U.S. Department of Agriculture (USDA). The PDSI measures the difference between water supply (precipitation and soil moisture) and water demand (amount needed to replenish soil moisture and keep larger bodies of water at normal levels.)

| Figure 3.2.2 Palmer Drought Severity Index (PDSI) | | | | | | |
|---|------------------------|--|--|--|--|--|
| Score | Characteristics | | | | | |
| Greater than 4 | Extreme moist spell | | | | | |
| 3.0 to 3.9 | Very moist spell | | | | | |
| 2.0 to 2.9 | Unusual moist spell | | | | | |
| 1.0 to 1.9 | Moist spell | | | | | |
| .5 to .9 | Incipient moist spell | | | | | |
| .4 to4 | Near normal conditions | | | | | |
| 5 to9 | Incipient drought | | | | | |
| -1 to -1.9 | Mild drought | | | | | |
| -2 to -2.9 | Moderate drought | | | | | |
| -3 to -3.9 | Severe drought | | | | | |
| Below -4 | Extreme drought | | | | | |

Missouri is divided into six regions of similar climactic conditions for PDSI reporting; Cole County is located in the West Central Region.

The Missouri Department of Natural Resource's drought response system is based on the PDSI and has four phases of increasing severity:

- Phase 1: Advisory Phase Water monitoring analysis indicates anticipated drought.
- Phase 2: Drought Alert PDSI reads -10 to -20; and stream flow, reservoir levels and groundwater levels are below normal over a period of several months.
- Phase 3: Conservation Phase PDSI reads between -2 to -4; stream flow, reservoir levels and groundwater levels continue to decline; and forecasts indicate an extended period of belownormal precipitation.
- Phase 4: Drought Emergency PSDI reads lower than -4.

A newer index which is currently being used by The National Drought Mitigation Center (NDMC) is the Standardized Precipitation Index (SPI). This index is based on the probability of precipitation; the time scale used in the probability estimates can be varied and makes the tool very flexible. The SPI is able to identify emerging droughts months sooner than is possible with the PDSI.

Geographic Location

The entire Planning Area is potentially at risk for drought. However, since the most common drought in central Missouri is agricultural drought, the jurisdiction most at risk is the unincorporated agricultural area of Cole County. This is the area where farmers are at risk for crop failure from drought and would suffer the most immediate and severe economic loss.

Previous Occurrences

Even though Cole County averages about 39" of precipitation per year, it has been subject to droughts in the past. Historical information concerning droughts prior to the 20th Century is difficult to find. However, tree-ring research at the University of Missouri, chronicling the years 912 to 2004, indicates a regular 18.6 year cycle of drought in the Midwest.

More detailed information is available for droughts in the 20th and current centuries. Missouri suffered drought in the 1930s and the early 1940s, along with most of the central United States. These were the Dust Bowl years in the southern plains.

The years 1953-1957 were actually drier years in Missouri than the Dust Bowl years. Missouri was specifically hit in 1954 and 1956 by an extreme decrease in precipitation. Crop yields were down by as much as 50%, leading to negative impacts on the agricultural and regional economies of the region.

The last major nationwide drought was in the late 1980's. The 1980's drought hit the Northern Great Plains and Northern Midwest particularly hard. Missouri suffered economic losses due to decreased barge traffic and low water in the Missouri and Mississippi Rivers. Furthermore, some municipalities suffered from very low water resources and in some instances exhausted all of their normal water sources, according to the Missouri Hazard Analysis (SEMA, August 1997).

Most of Missouri was in a drought condition during the last half of 1999, according to the Missouri State Hazard Mitigation Plan (2010). In September, the governor declared an agricultural emergency for the entire state. In October, all counties were declared agricultural disaster areas by the U.S. Secretary of Agriculture. By May of 2000, the entire state was under a Phase 2 Drought Alert. The drought continued through the summer of 2000 in various parts of the state.

Another drought hit western and northwestern Missouri in the years 2002 to 2004 but Cole County was not in the drought area.

The county did not fare as well in the drought years of 2005-2006, however. The droughts of 2005 and 2006 caused great hardship for many crop and livestock producers in the state. Cole County was one of 30 Missouri counties in Phase 3 Conservation in July 2005. In August, all 114 Missouri counties and the City of St. Louis were designated as natural disasters for physical and/or production loss loan assistance from the Farm Service Agency (FSA); conditions began to improve in late August/September 2005. By September of 2006, however, the county was again in Phase 3 Conservation which persisted through most of November. In October, Cole County was one of 85 Missouri counties designated by the USDA as primary natural disaster areas due

to losses from the drought conditions of 2006. Conditions began to improve with a large snowstorm in late November/early December.

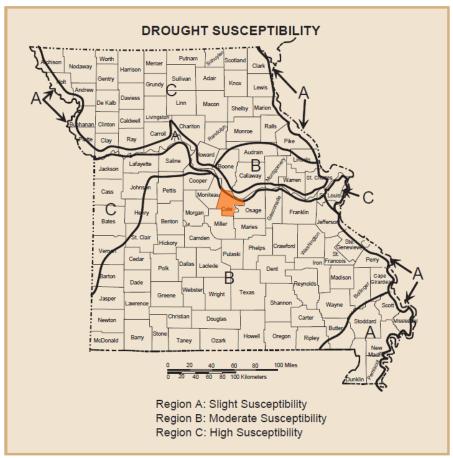
Cole County was in a Phase 1 Drought Advisory in both February and October of 2007.

Measure of Probability and Severity

Probability: Moderate – unincorporated Cole County; Low – all other participating jurisdictions Severity: Moderate – unincorporated Cole County; Low – all other participating jurisdictions

The Missouri Department of Natural Resources has defined different regions of drought susceptibility in the Missouri Drought Plan (2002). A map of the different regions is shown in Figure 3.2.3.

Figure 3.2.3



Cole County lies in Region B which is defined as "...moderate drought susceptibility. Groundwater resources are adequate to meet domestic and municipal water needs, but due to required well depths, irrigation wells are very expensive. The topography generally is unsuitable for row-crop irrigation."

The northern strip of the county, bordering the Missouri River, lies in Region A which is defined as having "...minor surface and groundwater supply drought susceptibility. It is a region underlain by saturated sands and gravels (alluvial deposits). Surface and groundwater resources are generally adequate for domestic, municipal, and agricultural needs."

Existing Mitigation Strategies

Multiple sources of water have been identified for various parts of the Planning Area. Some cooperative agreements/interconnections have been established between water providers (see Figure 2.9.26).

The Missouri Department of Natural Resources publishes a weekly map from The Drought Monitor on their website at: http://www.dnr.mo.gov/env/wrc/drought/nationalcondition.htm. The Drought Monitor is a comprehensive drought monitoring effort involving numerous federal agencies, state climatologists, and the National Drought Mitigation Center. It is located at the National Drought Mitigation Center in Lincoln, Nebraska. The new Drought Monitor Map, based on analysis of data collected, is released weekly on Thursday at 8:30 a.m. Eastern Time. The map focuses on broad-scale conditions and is linked to the data sets analyzed.

The University of Missouri Extension has a number of publications for both farmers and homeowners to help mitigate the effects of drought. They are available at: http://extension.missouri.edu/main/DisplayCategory.aspx?C=257

The National Drought Mitigation Center (NDMC) is located at the University of Nebraska-Lincoln. The following is a description of their activities from their website (http://drought.unl.edu/):

"The National Drought Mitigation Center (NDMC) helps people and institutions develop and implement measures to reduce societal vulnerability to drought, stressing preparedness and risk management rather than crisis management. Most of the NDMC's services are directed to state, federal, regional, and tribal governments that are involved in drought and water supply planning. The NDMC, established in 1995, is based in the School of Natural Resources at the University of Nebraska-Lincoln. The NDMC's activities include maintaining an information clearinghouse and drought portal; drought monitoring, including participation in the preparation of the U.S. Drought Monitor and maintenance of the web site (drought.unl.edu/dm); drought planning and mitigation; drought policy; advising policy makers; collaborative research; K-12 outreach; workshops for federal, state, and foreign governments and international organizations; organizing and conducting seminars, workshops, and conferences; and providing data to and answering questions for the media and the general public. The NDMC is also participating in numerous international projects, including the establishment of regional drought preparedness networks in collaboration with the United Nations' Secretariat for the International Strategy for Disaster Reduction."

Drought Vulnerability

Jurisdictions: Entire Planning Area; greater risk in Cole County (unincorporated areas)

Overview

The Missouri State Drought Plan states that rural areas in the state are more vulnerable to the effects of drought. So while all jurisdictions in the Planning Area are vulnerable to the effects of drought, the unincorporated agricultural areas of Cole County are most vulnerable because of crop loss. In addition to damage to crops, produce, livestock, and soil, and the resulting economic consequences, the arid conditions created by drought pose an increased risk of fire.

According to the 2007 US Census of Agriculture, 71% of Cole County land use is tied to farming activities. In 2007 the market value of Cole County farm products was estimated at \$34.7 million.

Potential Impact on Existing Structures

Structural impact in regard to this hazard is minimal to non-existent. Drought does, however, have far reaching economic consequence in regard to crop failure and high economic loss. The economic loss incurred would heavily impact the agricultural industry and those businesses dependent upon that industry for products.

Potential Impact on Future Development

Future development in the county can be at risk from the effects of drought. Good land management techniques are crucial in mitigating future impacts.

3. 3 Earthquake

Hazard Description

The United States Geological Society (USGS) describes an earthquake as "a sudden movement of the earth's crust caused by the release of stress accumulated along geologic faults or by volcanic activity." Earthquakes can be one of the most destructive forces of nature causing death, destruction of property, and billions of dollars of damage.

The New Madrid Seismic Zone (NMSZ), which runs through southeastern Missouri, is the most active seismic zone east of the Rocky Mountains. Any hazard mitigation planning in Missouri must, of necessity, take possible earthquakes into account.

Missouri and much of the Midwest can feel earthquakes from very far away because the geology of the area is more amenable to ground shaking than the California geology. New Madrid earthquakes can cover up to twenty times the area of typical California earthquakes because of this differing geology.

Measuring Earthquake Magnitude and Intensity

In any discussion of earthquakes, it is important to distinguish between two measurements: **magnitude** and **intensity.**

The **magnitude** of an earthquake is a measurement of the actual energy released by the quake at its epicenter. In the U.S., it is commonly measured by the Richter Scale denoted with an Arabic numeral (e.g. 6.0).

The **intensity** of an earthquake refers to the potentially damaging effects of a quake at any particular site. Intensity is measured by the Modified Mercalli Intensity Scale (MMI) and expressed by a Roman numeral (e.g. VI).

A single earthquake will thus have one magnitude but different intensities depending on a location's distance from the epicenter of the quake, intervening soil type, and other factors.

Geographic Location

The entire Planning Area is at risk for the effects of an earthquake along the New Madrid Seismic Zone. Areas close to the Missouri River may be particularly vulnerable, which includes most of Cole County. The soil, or alluvium, along river channels is especially vulnerable to liquefaction from earthquake waves; river alluvium also tends to amplify the waves.

Previous Occurrences

Historical quakes along the New Madrid Seismic Zone in southeastern Missouri have been some of the largest in U.S. history since European settlement. The Great New Madrid Earthquake of 1811-1812 was a series of over 2000 quakes which caused destruction over a very large area.

According to information from Missouri SEMA's Earthquake Program, some of the quakes measured at least 7.6 in magnitude and five of them measured 8.0 or more.

The 1811-1812 quakes changed the course of the Mississippi River. Some of the shocks were felt as far away as Washington D.C. and Boston.

The first federal disaster relief act was a result of the Great New Madrid Earthquake of 1811-1812. President James Madison signed an act into law which issued "New Madrid Certificates"; these certificates awarded government lands in other territories to residents of New Madrid County who wanted to leave the area.

Measure of Probability and Severity

Probability: High Severity: High

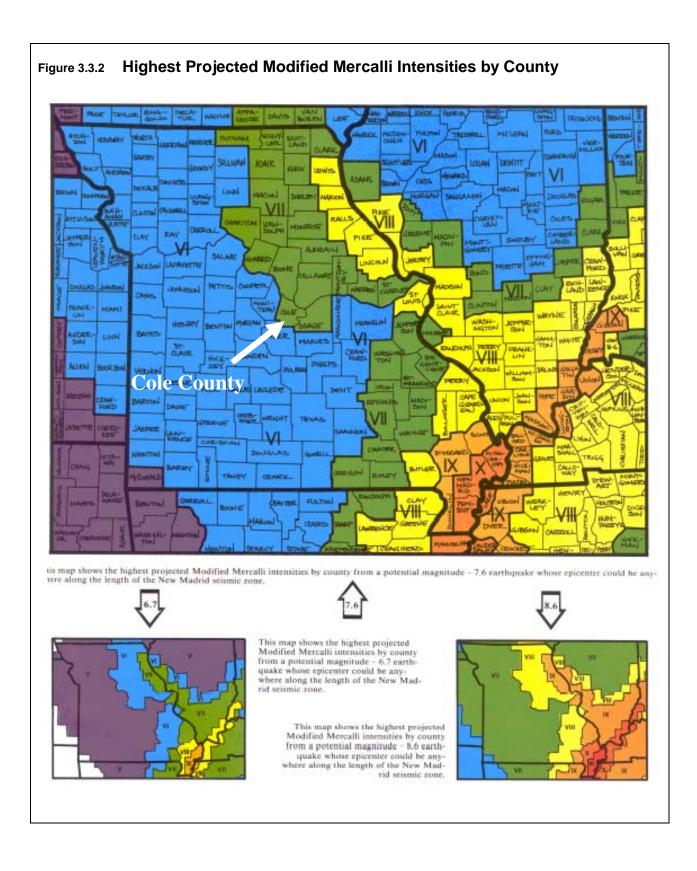
How likely are earthquakes along the New Madrid Seismic Zone? In 2002, the U.S. Geological Survey (USGS) released the following expectations for earthquakes in the zone in following 50 years:

- 25-40% percent chance of a magnitude 6.0 and greater earthquake.
- 7 -10% chance of a magnitude 7.5 8.0 quake (magnitudes similar to those in 1811-1812)

According to the USGS, Cole County is one of the 47 counties in Missouri that would be severely impacted by a 7.6 magnitude earthquake with an epicenter on or near the New Madrid Seismic Zone.

The State Emergency Management Agency (SEMA) has made projections of the highest earthquake intensities which would be experienced throughout the state of Missouri should various magnitude quakes occur along the New Madrid Seismic Zone as measured by the Modified Mercalli Intensity Scale. The pertinent information for the Planning Area is summarized in Figure 3.3.1. The complete Modified Mercalli Scale and the projections for the entire state of Missouri are included in Figures 3.3.2 and 3.3.3.

| Figure 3.3.1 | Figure 3.3.1 | | | | | | | |
|---|---|--|---------------------|--|--|--|--|--|
| Projected Earthquake Hazard for Planning Area | | | | | | | | |
| Magnitude at NMSZ* | Probability of Occurrence (2002-2052) | Intensity in Planning Area (MMI**) | MMI** Descriptor | Expected Damage | | | | |
| 6.7 | 25-40% | VI | "Strong" | Felt by all; many frightened and run outdoors, walk unsteadily. Windows, dishes, glassware broken; books fall off shelves; some heavy furniture moved or overturned; a few instances of fallen plaster. Damage slight. | | | | |
| 7.6 | 7-10% | VII | "Very Strong" | Difficult to stand; furniture broken; damage negligible in building of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken. Noticed by people driving motor cars. | | | | |



| Figure 3.3.3 | |
|-------------------------------------|--|
| | Modified Mercalli Intensity Scale |
| I. Instrumental | Not felt by many people unless in favorable conditions. |
| II. Feeble | Felt only by a few people at best, especially on the upper floors of buildings. Delicately suspended objects may swing. |
| III. Slight | Felt quite noticeably by people indoors, especially on the upper floors of buildings. Many do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration similar to the passing of a truck. Duration estimated. |
| IV. Moderate | Felt indoors by many people, outdoors by few people during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rock noticeably. Dishes and windows rattle alarmingly. |
| V. Rather Strong | Felt outside by most, may not be felt by some outside in non-favorable conditions. Dishes and windows may break and large bells will ring. Vibrations like large train passing close to house. |
| VI. Strong | Felt by all; many frightened and run outdoors, walk unsteadily. Windows, dishes, glassware broken; books fall off shelves; some heavy furniture moved or overturned; a few instances of fallen plaster. Damage slight. |
| VII. Very Strong | Difficult to stand; furniture broken; damage negligible in building of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken. Noticed by people driving motor cars. |
| VIII. Destructive | Damage slight in specially designed structures; considerable in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture moved. |
| IX. Ruinous | General panic; damage considerable in specially designed structures, well designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations. |
| X. Disastrous | Some well built wooden structures destroyed; most masonry and frame structures destroyed with foundation. Rails bent. |
| XI. Very Disastrous | Few, if any masonry structures remain standing. Bridges destroyed. Rails bent greatly. |
| XII. Catastrophic | Total damage - Almost everything is destroyed. Lines of sight and level distorted. Objects thrown into the air. The ground moves in waves or ripples. Large amounts of rock may move position. |
| Source: http://en.wikipedia.org/wil | ki/Mercalli_intensity_scale |

Existing Mitigation Strategies

An ongoing mitigation activity in the Planning Area is the training of staff in earthquake safety/response. Personnel of the Cole County Emergency Services Office are well-trained and well-equipped to respond to disasters of all types.

School Districts

By law all schools in Cole County must provide training and exercises to students in preparation for a large earthquake. According to the Revised Statues of Missouri:

The governing body of each school district which can be expected to experience an intensity of ground shaking equivalent to a Modified Mercalli of VII or above from an earthquake occurring along the New Madrid Fault with a potential magnitude of 7.6 on the Richter Scale shall establish an earthquake emergency procedure system in every school building under its jurisdiction. (*RSMo 160.451*)

This earthquake emergency system shall include 1) A school building disaster plan; 2) An emergency exercise to be held at least twice each school year; 3) Protective measures to be taken before, during, and following an earthquake; and 4) A program to ensure that the students and certified and noncertified employees of the school district are aware of, and properly trained in, the earthquake emergency procedure system. (*RSMo 160.453*)

At the beginning of each school year, each school district shall distribute to each student materials that have been prepared by the Federal Emergency Management Agency, SEMA, or by agencies that are authorities in the area of earthquake safety and that provide the following objectives: 1) Developing public awareness regarding the causes of earthquakes, the forces and effects of earthquakes, and the need for school and community action in coping with earthquake hazards; 2) Promoting understanding of the impact of earthquakes on natural features and manmade structures; and 3) Explaining what safety measures should be taken by individuals and households prior to, during and following an earthquake. (*RSMo 160.455*)

Earthquake Vulnerability

Jurisdictions: All Jurisdictions

Overview

As discussed previously, the USGS in 2002 projected a fairly high chance of an earthquake in the New Madrid Seismic Zone in the following 50 years which, according to SEMA, would cause "Strong" or "Very Strong" effects in the Planning Area. "Strong" earthquake effects would result in minimal property damage but "Very Strong" effects would cause slight to moderate damage in well-built ordinary structures and considerable damage in poorly built or designed structures.

As with any traumatic event, the potential for "emotional aftershocks" exists with any earthquake event. Major earthquake events require mental health services for people dealing with loss, stress, anxiety, fear, and other difficult emotions. Even a smaller quake, however, has the potential for emotional repercussions; the sudden movement of something normally experienced as stable (the earth itself) can be very traumatic.

Potential Impact on Existing Structures

Figure 3.3.4 Estimated exposed structures

| Impact Assessment Earthquake | | | | | | | | | | | |
|--|----------------------------------|------------|------------|--------------|-----------|--------------|-------------|--|--|--|--|
| High Vulnerability = 10 - 100% of buildings impacted | | | | | | | | | | | |
| | Maximum Calculated Impact (100%) | | | | | | | | | | |
| | | | Buildi | ng Type | | | | | | | |
| Jurisdiction | Residential | Commercial | Industrial | Agricultural | Religious | Governmental | Educational | | | | |
| Planning Area | 25436 | 1479 | 355 | 162 | 186 | 1120 | 46 | | | | |
| Cole County (unincorporated areas) | 9774 | 363 | 135 | 104 | 30 | 14 | 8 | | | | |
| Jefferson City | 13782 | 1023 | 190 | 43 | 147 | 1095 | 32 | | | | |
| Lohman | 83 | 9 | 1 | 1 | 2 | 1 | 0 | | | | |
| Russellville | 419 | 17 | 2 | 3 | 2 | 2 | 2 | | | | |
| St. Martins | 418 | 20 | 11 | 3 | 2 | 0 | 1 | | | | |
| St. Thomas | 128 | 6 | 2 | 3 | 1 | 1 | 1 | | | | |
| Taos | 324 | 12 | 6 | 0 | 1 | 2 | 1 | | | | |
| Wardsville | 357 | 20 | 7 | 5 | 1 | 3 | 1 | | | | |
| HAZUS MH | | | | | | | | | | | |

Potential Impact on Future Development

Impacts on future development may be mitigated by following more stringent earthquake resistant building codes. However, this type of mitigation activity may not be cost effective for most communities.

The potential impact of earthquakes on future development would be the same as for existing structures.

3.4 Extreme Heat

Description of Hazard

Extreme heat is the number one weather-related killer in the United States, according to National Oceanic and Atmospheric Administration (NOAA). In contrast to the visible, destructive, and violent nature of floods, hurricanes, and tornadoes, extreme heat is a silent killer. Heat kills by overloading the human body's capacity to cool itself. According to information from NOAA, more than 1500 people die on average from excessive heat each year in the United States.

Air temperature is not the only factor to consider when assessing the likely effects of extreme heat. High humidity often accompanies heat in Missouri and increases the danger. The human body cools itself by perspiring; the evaporation of perspiration carries excess heat from the body. High humidity makes it difficult for perspiration to evaporate and thus interferes with this natural cooling mechanism.

The Heat Index devised by the NWS takes into account both air temperature and relative humidity (See Figure 3.4.1). The Heat Index, also known as the apparent temperature, is a measure of how hot it really feels.

| Figu | re 3.4.1 | | | | | | | | | | | | | |
|-----------------|-------------------|---------|-----------|---------|-----------|----------|-----|-----|-----|-----|-----|-----|-----|------|
| | HEAT INDEX | | | | | | | | | | | | | |
| | Relative Humidity | | | | | | | | | | | | | |
| | | 40% | 45% | 50% | 55% | 60% | 65% | 70% | 75% | 80% | 85% | 90% | 95% | 100% |
| | 110° | 136 | | | | | | | | | | | | |
| | 108° | 130 | 137 | | | | | | | | | | | |
| | 106° | 124 | 130 | 137 | | | | | | | | | | |
| | 104° | 119 | 124 | 131 | 137 | | | | | | | | | |
| ıre | 102° | 114 | 119 | 124 | 130 | 137 | | | | | | | | |
| Air Temperature | 100° | 109 | 114 | 118 | 124 | 129 | 136 | | | | | | | |
| bel | 98° | 105 | 109 | 113 | 117 | 123 | 128 | 134 | | | | | | |
| em | 96° | 101 | 104 | 108 | 112 | 116 | 121 | 126 | 132 | | | | | |
| <u>⊢</u> | 94° | 97 | 100 | 102 | 106 | 110 | 114 | 119 | 124 | 129 | 135 | | | |
| ₹ | 92° | 94 | 96 | 99 | 101 | 105 | 108 | 112 | 116 | 121 | 126 | 131 | | |
| | 90° | 91 | 93 | 95 | 97 | 100 | 103 | 106 | 109 | 113 | 117 | 122 | 127 | 132 |
| | 88° | 88 | 89 | 91 | 93 | 95 | 98 | 100 | 103 | 106 | 110 | 113 | 117 | 121 |
| | 86° | 85 | 87 | 88 | 89 | 91 | 93 | 95 | 97 | 100 | 102 | 105 | 108 | 112 |
| | 84° | 83 | 84 | 85 | 86 | 88 | 89 | 90 | 92 | 94 | 96 | 98 | 100 | 103 |
| | 82° | 81 | 82 | 83 | 84 | 84 | 85 | 86 | 88 | 89 | 90 | 91 | 93 | 95 |
| F° | 80° | 80 | 80 | 81 | 81 | 82 | 82 | 83 | 84 | 84 | 85 | 86 | 86 | 87 |
| Source | ce: http:/ | //www.n | ws.noaa | .gov/om | /heat/ind | dex.shtm | ıl | | | | | | | |

Residents of both urban and rural areas are vulnerable to excessive heat. There are many factors such as age, general level of health, outdoor activity level, and availability of air conditioning that will affect the actual risk level.

Geographic Location

The entire Planning Area is at risk from extreme heat events.

Previous Occurrences

Cole County has had many periods of extreme heat in the last two decades (see Figure 3.4.2). This data indicates that extreme heat usually occurs in July and August.

When examining the data in Figure 3.4.2, it is important to take into consideration that the deaths, injuries, and economic losses represent all counties in Missouri affected by the period of extreme heat. None of the deaths recorded in the data occurred in Cole County, however.

| Figure 3.4. | Figure 3.4.2 Periods of Extreme Heat in Cole County, 1994-2009 | | | | | | | |
|--------------|---|----------------|---------------|--------------------|----------------|-----------------|--|--|
| Date | Heat Index | Deaths | Injuries | Property Damage | Crop Damage | Duration (days) | | |
| 06/12/94 | 100+ | 4 | 55 | 0 | 50K | 12 | | |
| 07/17/95 | 120 | 20 | 225 | 75K | 400K | 6 | | |
| 07/28/95 | 110+ | 0 | 120 | 15K | 25K | 4 | | |
| 08/01/95 | 110-120 | 9 | 230 | 0 | 400K | most of August | | |
| 07/18/99 | 105-115 | 42 | 397 | 0 | 0 | 14 | | |
| 07/07/01 | 105-110 | 5 | 61 | 0 | 0 | 4 | | |
| 07/17/01 | 110-115 | 0 | 19 | 0 | 0 | 1 | | |
| 07/21/01 | 105-115 | 3 | 71 | 0 | 0 | 4 | | |
| 07/29/01 | 105-115 | 0 | 4 | 0 | 0 | 3 | | |
| 08/01/01 | 105 | 0 | 34 | 0 | 0 | 2 | | |
| 08/07/01 | 102-110 | 1 | 10 | 0 | 0 | 3 | | |
| 08/21/01 | 105-110 | 0 | 14 | 0 | 0 | 2 | | |
| 07/08/02 | 105-110 | 1 | 26 | 0 | 0 | 2 | | |
| 07/20/02 | 105-115 | 0 | 47 | 0 | 0 | 3 | | |
| 07/26/02 | 105-115 | 0 | 185 | 0 | 0 | 6 | | |
| 08/01/02 | 100+ | 1 | 59 | 0 | 0 | 6 | | |
| 08/15/03 | 105+ | 2 | 54 | 0 | 0 | 7 | | |
| 08/24/03 | 105-110 | 0 | 0 | 0 | 0 | 5 | | |
| 07/20/04 | 105-110 | 0 | 25 | 0 | 0 | 3 | | |
| 07/20/05 | 105-120 | 4 | 65 | 0 | 0 | 7 | | |
| 07/17/06 | 105-110 | 0 | 12 | 0 | 0 | 4 | | |
| 07/29/06 | 105-110 | 0 | 0 | 0 | 0 | 3 | | |
| 08/01/06 | NA | 0 | 59 | 0 | 0 | 2 | | |
| 08/05/07 | 105-110 | 0 | 0 | 0 | 0 | 12 | | |
| 06/21/09 | 100-107 | 0 | 0 | 0 | 0 | 7 | | |
| ТО | TALS | 92 | 1772 | 90K | 875K | | | |
| Source: http | ://www4.ncdc.noa | aa.gov/cgi-wir | n/wwcgi.dll?w | wevent~storms | | | | |

Measures of Probability and Severity

Probability: Moderate Severity: Moderate

Existing Mitigation Activities

The following departments, agencies, and organizations all are involved in educating the public about the dangers of extremely hot weather and/or issuing alerts when the threat of extreme heat is imminent.

<u>Cole County Emergency Management and the Cole County Health Department</u> issue alerts to notify the public of extreme heat conditions. The alerts urge the public to check on their neighbors and to seek cooling in the shopping malls or library, if needed.

<u>The Jefferson City Salvation Army</u> allows anyone to stay at their facility during extreme heat events.

<u>The Missouri Department of Health and Senior Services</u> announces statewide hot weather health alerts according to the following criteria:

- **Hot Weather Health Alert** Heat indices of 105°F in a large portion of the state are first reached (or predicted)
- Hot Weather Health Warning Heat indices have been 105°F or more for two days in a large portion of the state, or weather forecasts call for continued heat stress conditions for at least 24 to 48 hours over a large portion of the state.
- **Hot Weather Health Emergency** When extensive areas of the state meet all of the following criteria:
 - High sustained level of heat stress (Heat Index of 105°F for 3 days)
 - Increased numbers of heat-related illnesses and deaths statewide
 - The NWS predicts hot, humid temperatures for the next several days for a large portion of the state.

<u>The Missouri Department of Health and Human Services</u> also maintains a searchable online map/database of cooling centers throughout the state (http://gis.dhss.mo.gov/Website/coolingCenter/coolingCenter.html#).

As of 2010, the following cooling centers are listed for Cole County:

- Clarke Senior Center, 1310 Linden Dr., Jefferson City
- Missouri River Regional Library, 214 Adams St., Jefferson City
- Senior Center at the Mall, 3600 Country Club Dr., Suite 522, Jefferson City

<u>The National Weather Service (NWS)</u> has devised a method to warn of advancing heat waves up to seven days in advance. The new Mean Heat Index is a measure of how hot the temperatures actually feel to a person over the course of a full 24 hours. It differs from the traditional Heat Index in that it is an average of the Heat Index from the hottest and coldest times of each day.

The National Weather Service initiates alert procedures when the Heat Index is expected to exceed 105°- 110°F for at least two consecutive days. (The exact Heat Index temperature used depends on specifics of the local climate.) The following are released to the media and over NOAA All-Hazard Weather Radio:

- Heat Index values are included in zone and city forecasts.
- Special Weather Statements and/or Public Information Statements are issued which
 present a detailed discussion of the Heat Index Values, who is most at risk, and safety
 rules for reducing risk.
- In severe heat waves, State and local health officials are assisted in preparing Civil Emergency Messages which include Special Weather Statements and more detailed medical information, advice, and names and telephone numbers of health officials.

<u>Weather Forecast Offices of the National Weather Service (NWS)</u> can issue the following warnings about excessive heat:

- Excessive Heat Outlook: Potential exists for an excessive heat event in the next 3 to 7 days. An outlook is used to indicate that a heat event may develop. It is intended to provide information to those who need considerable lead time to prepare for the event, such as public utilities, emergency management and public health officials.
- Excessive Heat Watch: Conditions are favorable for an excessive heat event in the next 12 to 48 hours. A watch is used when the risk of a heat wave has increased, but its occurrence and timing is still uncertain. It is intended to provide enough lead time so those who need to set their plans in motion can do so, such as established individual city excessive heat event mitigation plans.
- Excessive Heat Warning/Advisory: An excessive heat event is expected in the next 36 hours. The warning is used for conditions posing a threat to life or property. An advisory is for less serious conditions that cause significant discomfort or inconvenience and, if caution is not taken, could lead to a threat to life and/or property.

<u>The Missouri State High School Activities Association (MSHSAA)</u> provides coaches with educational pamphlets on the dangers of excessive heat.

Extreme Heat Vulnerability

Jurisdictions: All Jurisdictions

Overview

All jurisdictions are vulnerable to the effects of extreme heat. While heat-related illness and death can occur due to exposure to intense heat in just one afternoon, heat stress on the body has a cumulative effect. The persistence of a heat wave increases the danger.

Loss of life is the most significant consequence of extreme heat. The elderly and those active or employed in outdoor settings are most vulnerable. According to the World Health Organization, "elderly" is defined as those over the age of 65. Elderly are the most susceptible to complications from excessive and/or prolonged cold or heat. According to the US Census Bureau website the estimated Cole County 2008 elderly population stands at 8,712. Residents without access to air conditioning, water, and shade are most vulnerable.

In addition to the human toll, the Midwestern Climate Center, in a paper on the 1999 heat wave, points out other possible impacts such as electrical infrastructure damage and failure, highway damage, crop damage, water shortages, livestock deaths, fish kills, and lost productivity among outdoor-oriented businesses. These damages are also connected to **Drought** when there are prolonged and/or recurrent periods of excessive heat.

Potential Impact on Existing Structures

While loss of life is of the most concern with this hazard, structural impacts also exist. These impacts are limited and dependent on how long the period of extreme heat lasts. Failure of road surfaces, electrical infrastructure, and crop damage may all occur.

Figure 3.4.3 Estimated exposed structures

| Impact Assessment Extreme Heat | | | | | | | | | | | |
|--|---------------------------------|------------|------------|--------------|-----------|--------------|-------------|--|--|--|--|
| Medium Vulnerability = 5 - 10% of buildings impacted | | | | | | | | | | | |
| | Maximum Calculated Impact (10%) | | | | | | | | | | |
| | | | Buildir | ng Type | | | | | | | |
| Jurisdiction | Residential | Commercial | Industrial | Agricultural | Religious | Governmental | Educational | | | | |
| Planning Area | 2544 | 148 | 36 | 16 | 19 | 112 | 5 | | | | |
| Cole County (unincorporated areas) | 903 | 36 | 14 | 11 | 2 | 2 | 2 | | | | |
| Jefferson City | 1378 | 102 | 19 | 4 | 15 | 110 | 3 | | | | |
| Lohman | 83 | 1 | 0 | 0 | 0 | 0 | 0 | | | | |
| Russellville | 42 | 2 | 0 | 0 | 0 | 0 | 0 | | | | |
| St. Martins | 42 | 2 | 1 | 0 | 0 | 0 | 0 | | | | |
| St. Thomas | 13 | 1 | 0 | 0 | 0 | 0 | 0 | | | | |
| Taos | 32 | 1 | 1 | 0 | 0 | 0 | 0 | | | | |
| Wardsville | 36 | 2 | 1 | 1 | 0 | 0 | 0 | | | | |
| HAZUS MH | | | | | | | | | | | |

Potential Impact on Future Development

Potential impacts of this hazard on future development are not quantifiable with the resources available.

3.5 Flood

Description of Hazard

Flooding is defined as partial or complete inundation of usually dry areas. Riverine flooding refers to when a river or creek overflows its normal boundaries. The relatively flat areas adjacent to rivers and stream banks which are inundated at times of high water are called floodplains. The term base flood, or 100-year flood, is the area in the floodplain that is subject to a one percent or greater chance of flooding in any given year, based upon historical records.

A rapid accumulation or runoff of surface waters may impact smaller rivers and creeks and cause flash flooding. Flash flooding can also occur as a result of dams being breached or overtopped. Flash floods can develop in just a matter of hours and are responsible for more flood related deaths than any other type of flooding.

In some cases, however, flooding may not be directly attributed to a river, stream or lake overflowing its banks. It may simply be the combination of excessive rainfall and/or snowmelt, saturated ground, and inadequate drainage. With no place else to go, 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.

Local storm water flooding can result when tremendous flow of water occurs due to large rain events. Local flooding can create public safety issues due to flooded roadways and drainage structures.

The Planning Area is at great risk for flooding. Waterways include the Missouri River to the north, the Osage River to the east and southeast, the Moreau River in the west and southwest, and various other creeks and branches. Flooding could potentially occur anywhere along these waterways.

The Missouri River, which forms the northern border of Cole County, is the longest river in the United States. The Missouri River drains approximately one-sixth of the area of the continental United States, according to the USGS. It drains over half the state of Missouri as it flows eastward to join the Mississippi River at St. Louis. Since Cole County is located less than 200 miles upstream from the mouth of this 2,540 mile river, it is obvious that flooding of the Missouri River is a major concern for the county.

Most flooding in Cole County occurs in spring and summer but floods can occur in any season.

Geographic Location

The entire Planning Area is subject to potential flooding.

Cole County (unincorporated area), Jefferson City, Lohman, St. Martins, Taos, and Wardsville are all at risk from riverine flooding because they have area in the 100-year flood plain. Neither of the school districts nor Lincoln University have buildings lying within the 100-year flood plain.

The current digital Flood Insurance Rate Map (d-FIRM) for Cole County is dated 12/2/2005; it shows the flood zones for these jurisdictions at risk for riverine flooding. (Flood zones are geographic areas defined according to varying levels of flood risk; each zone reflects the severity or type of flooding in the area.) The flood zones for the Planning Area are shown in Figure 3.5.1.

Flash flooding and subsequent road closures are a concern for all jurisdictions in the Planning Area. Flash flooding occurs throughout the Planning Area and as a result road closures due to high water are common throughout the county. Figure 3.5.2a-e depicts designated flood areas in the county that cross roadways. This information was collected in September of 2010 by Cole County Public Works and only contains data pertaining to county maintained low water crossings, low water bridges, culverts, and pipes. Those points labeled **flood area** are flood prone areas that are marked with a series of 3 flood warning signs with the following messages: "Flood area ahead", "Impassable during high water", "Do not enter when flooded".

Figure 3.5.1

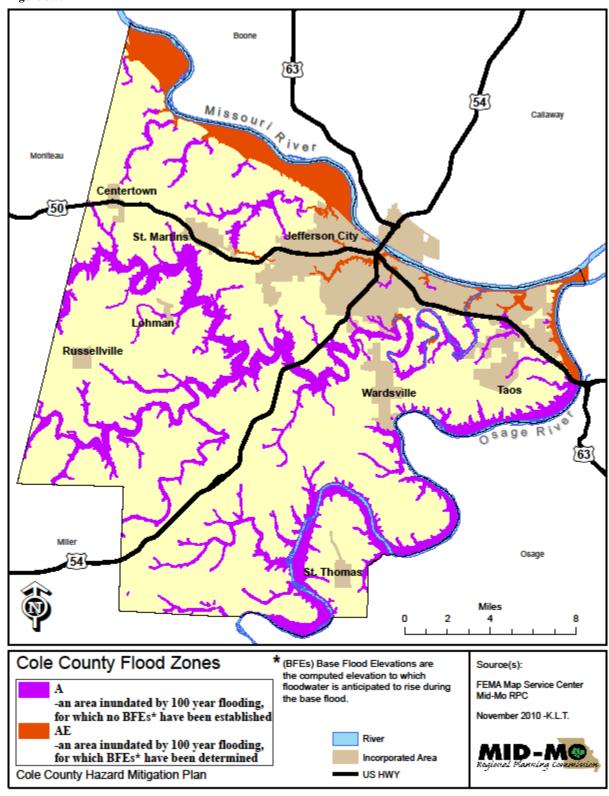
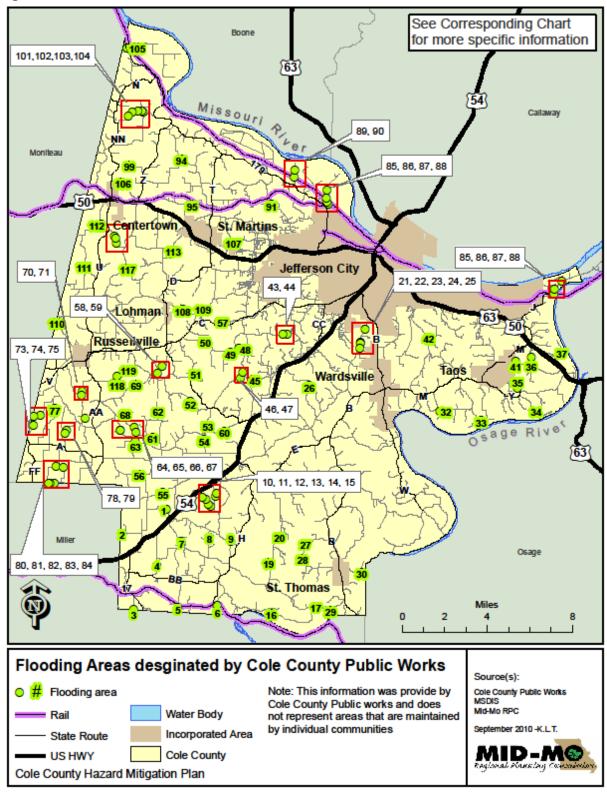


Figure 3.5.2a



| Figure | Figure 3.5.2b Cole County Public Works Designated Flood Areas | | | | | | |
|-----------|--|--------------------|---|--|--|--|--|
| Map ID | Road | Structure | Area Designation/Comments | | | | |
| 1 | Clark Fork Rd | Box Culvert | Flood Area | | | | |
| 2 | Binkley Rd | Low Water Crossing | Flood Area | | | | |
| 3 | Southwest Rd | Low Water Crossing | Not Signed For Flooding | | | | |
| 4 | Penny Hollow Rd | Bridge | Flood Area | | | | |
| 5 | Swift Rd | Low Water Crossing | Flood Area | | | | |
| 6 | Pit Rd | Box Culvert | Flood Area | | | | |
| 7 | Boise Brule Rd | Low Water Crossing | Not Signed For Flooding | | | | |
| 8 | Blue Ridge Rd | Low Water Crossing | Flood Area | | | | |
| 9 | Hickory Hill Rd | Box Culvert | Flood Area | | | | |
| 10 | Sandy Fork Rd | Low Water Crossing | Flood Area | | | | |
| 11 | Sandy Fork Rd | Low Water Crossing | Flood Area | | | | |
| 12 | Sandy Fork Rd | Low Water Crossing | Flood Area | | | | |
| 13 | Sandy Fork Rd | Low Water Crossing | Flood Area | | | | |
| 14 | Fall Hill Rd | Pipe | Flood Area | | | | |
| 15 | Fall Hill Rd | Box Culvert | Flood Area | | | | |
| 16 | S Teal Bottom Rd | Pipe | Flood Area, Slough Backs Up From Osage River | | | | |
| 17 | Scheuler Ferry Rd W | Box Culvert | Flood Area, Slough Backs Up From Osage River | | | | |
| 18 | Deer Run Rd | Pipe | Flood Area | | | | |
| 19 | Deer Run Rd | Bridge | Flood Area | | | | |
| 20 | Deer Run Rd | Box Culvert | Flood Area | | | | |
| 21 | Tanner Bridge Rd | Bridge | Flood Area | | | | |
| 22 | Tanner Bridge Rd | Pipe | Flood Area | | | | |
| 23 | Tanner Bridge Rd | Pipe | Flood Area | | | | |
| 24 | Tanner Bridge Rd | Pipe | Flood Area | | | | |
| 25 | Tanner Bridge Rd | Box Culvert | Flood Area | | | | |
| 26 | Buffalo Rd | Box Culvert | Flood Area | | | | |
| 27 | Upper Bottom Rd | Box Culvert | Flood Area | | | | |
| 28 | Upper Bottom Rd | Box Culvert | Flood Area | | | | |
| 29 | Scheuler Ferry Rd | Pipe | Flood Area, Slough Backs Up From Osage River | | | | |
| 30 | Profits Creek Rd | Box Culvert | Flood Area | | | | |
| 31 | Lake Rd | Box Culvert | Flood Area | | | | |
| 32 | Lake Rd | Box Culvert | Flood Area | | | | |
| 33 | Bode Ferry Rd | Bridge | Flood Area | | | | |
| 34 | Lock And Dam Rd | Pipe | Flood Area, Slough Backs Up From Osage River | | | | |
| 35 | Helias Spur | Box Culvert | Flood Area | | | | |
| 36 | S Liberty Rd | Low Water Crossing | Flood Area | | | | |

| Figure | Figure 3.5.2c Cole County Public Works Designated Flood Areas | | | | | | |
|-----------|--|--------------------|---|--|--|--|--|
| Map ID | Road | Structure | Area Designation/Comments | | | | |
| 37 | Lisletown Rd | Pipe | Flood Area, Slough Backs Up From Osage River | | | | |
| 38 | Osage Water St | Flood Area | Flood Area, Road Next To Osage River | | | | |
| 39 | Engineers Rd | Flood Area | Flood Area, Slough Backs Up From Osage River | | | | |
| 40 | Engineers Rd | Flood Area | Flood Area, Slough Backs Up From Osage River | | | | |
| 41 | Stoney Gap Rd | Box Culvert | Flood Area | | | | |
| 42 | Bald Hill Rd | Bridge | Flood Area | | | | |
| 43 | Zion Rd | Box Culvert | Flood Area | | | | |
| 44 | Zion Rd | Bridge | Flood Area | | | | |
| 45 | Beck Rd | Box Culvert | Flood Area | | | | |
| 46 | Bainer Rd | Box Culvert | Flood Area | | | | |
| 47 | Loesch Rd | Bridge | Flood Area | | | | |
| 48 | Walnut Acres Rd | Bridge | Flood Area | | | | |
| 49 | Walnut Acres Rd | Box Culvert | Flood Area | | | | |
| 50 | Walnut Acres Rd | Bridge | Flood Area | | | | |
| 51 | Stringtown Rd | Box Culvert | Flood Area | | | | |
| 52 | Vaughn Ford Rd | Low Water Crossing | Flood Area | | | | |
| 53 | Oakland Rd | Box Culvert | Flood Area | | | | |
| 54 | Oakland Rd | Low Water Crossing | Flood Area | | | | |
| 55 | Old Bass Rd | Bridge | Flood Area | | | | |
| 56 | Jones Rd | Low Water Crossing | Not Signed For Flooding | | | | |
| 57 | Hemstreet Rd | Bridge | Flood Area | | | | |
| 58 | Kautsch Rd | Box Culvert | Flood Area | | | | |
| 59 | Kautsch Rd | Box Culvert | Flood Area | | | | |
| 60 | Scrivner Rd | Box Culvert | Flood Area | | | | |
| 61 | Gully Rd | Low Water Crossing | Flood Area | | | | |
| 62 | Dawson Rd | Low Water Crossing | Not Signed For Flooding | | | | |
| 63 | S Branch Rd | Low Water Crossing | Flood Area | | | | |
| 64 | N Branch Rd | Low Water Crossing | Flood Area | | | | |
| 65 | N Branch Rd | Low Water Crossing | Flood Area | | | | |
| 66 | Scrivner Rd | Bridge | Flood Area | | | | |
| 67 | Scrivner Rd | Bridge | Flood Area | | | | |
| 68 | Scott Rd | Low Water Crossing | Not Signed For Flooding | | | | |
| 69 | Claywell Rd | Box Culvert | Flood Area | | | | |
| 70 | Curtman Rd | Box Culvert | Flood Area | | | | |
| 71 | Curtman Rd | Box Culvert | Flood Area | | | | |
| 72 | Clearwater Rd | Bridge | Flood Area | | | | |
| 73 | Enon Rd | Box Culvert | Flood Area | | | | |

| Figure 3.5.2d Cole County Public Works Designated Flood Areas | | | | | | |
|--|--------------------|--------------------|--|--|--|--|
| Map ID | Road | Structure | Area Designation/Comments | | | |
| 74 | Settlen Rd | Pipe | Flood Area | | | |
| 75 | Settlen Rd | Pipe | Flood Area | | | |
| 76 | Campbell Rd | Low Water Crossing | Flood Area | | | |
| 77 | Campbell Rd | Bridge | Flood Area | | | |
| 78 | Payne Rd | Low Water Crossing | Flood Area | | | |
| 79 | Payne Rd | Bridge | Flood Area | | | |
| 80 | W Alexander Rd | Box Culvert | Flood Area | | | |
| 81 | Alexander Rd | Box Culvert | Flood Area | | | |
| 82 | County Line Rd | Bridge | Flood Area | | | |
| 83 | County Line Rd | Box Culvert | Flood Area | | | |
| 84 | County Line Rd | Box Culvert | Flood Area | | | |
| 85 | E Cole Junction Rd | Flood Area | Flood Area, Road Is Next To Greys Creek Which Backs Up From Missouri River | | | |
| 86 | E Cole Junction Rd | Pipe | Flood Area, Slough Backs Up From Missouri River | | | |
| 87 | E Cole Junction Rd | Pipe | Flood Area, Slough Backs Up From Missouri River | | | |
| 88 | W Cole Junction Rd | Pipe | Flood Area, Slough Backs Up From Missouri River | | | |
| 89 | Claysville Rd | Pipe | Flood Area, Slough Backs Up From Missouri River | | | |
| 90 | Claysville Rd | Pipe | Flood Aera, Slough Backs Up From Missouri River | | | |
| 91 | Scott Station Rd | Bridge | Flood Area North Of Bridge | | | |
| 93 | High Point Rd | Box Culvert | Flood Area | | | |
| 94 | High Point Rd | Box Culvert | Flood Area | | | |
| 95 | Old Stage Rd | Pipe | Flood Area | | | |
| 99 | Bryant Rd | Flood Area | Flood Area, Road Next To Unnamed Creek | | | |
| 100 | Mud Creek Rd | Low Water Crossing | Flood Area | | | |
| 101 | Mud Creek Rd | Low Water Crossing | Flood Area | | | |
| 102 | Mud Creek Rd | Box Culvert | Flood Area | | | |
| 103 | Mud Creek Rd | Box Culvert | Flood Area | | | |
| 104 | Mud Creek Rd | Pipe | Flood Area | | | |
| 105 | Moniteau Creek Rd | Bridge | Not Signed For Flooding, Moniteau Creek Backs Up From Missouri River | | | |
| 106 | Kings Chapel Rd W | Low Water Crossing | Flood Area | | | |
| 107 | Rainbow Dr | Box Culvert | Flood Area | | | |
| 108 | E Lohman Rd | Low Water Crossing | Flood Area | | | |

| Figure | Figure 3.5.2e | | | | | | | |
|-----------|---|--------------------|---------------------------|--|--|--|--|--|
| | Cole County Public Works Designated Flood Areas | | | | | | | |
| Map ID | Road | Structure | Area Designation/Comments | | | | | |
| 109 | Meadows Ford Rd | Low Water Crossing | Flood Area | | | | | |
| 110 | Rockhouse Spur | Low Water Crossing | Flood Area | | | | | |
| 111 | Waterford Rd | Low Water Crossing | Flood Area | | | | | |
| 112 | Waterford Rd | Box Culvert | Flood Area | | | | | |
| 113 | Kaylor Bridge | Bridge | Flood Area | | | | | |
| 114 | Wayside Rd | Box Culvert | Flood Area | | | | | |
| 115 | Wayside Rd | Box Culvert | Flood Area | | | | | |
| 116 | Wayside Rd | Pipe | Flood Area | | | | | |
| 117 | Murphy Ford Rd | Low Water Crossing | Flood Area | | | | | |
| 118 | Tellman Rd | Box Culvert | Flood Area | | | | | |
| 119 | Tellman Rd | Box Culvert | Flood Area | | | | | |
| Source | : Cole County Public Works - Collected | September 2010 | | | | | | |

Previous Occurrences

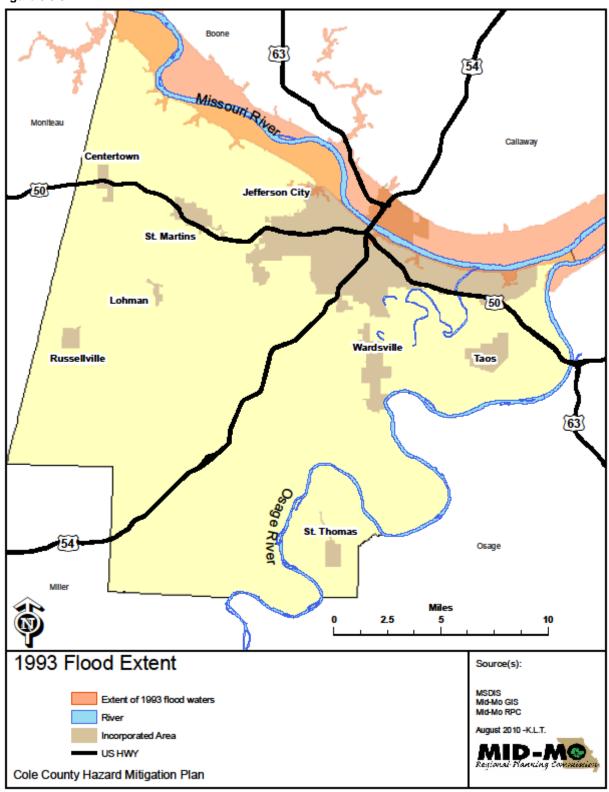
The floods of 1993 and 1995 were the worst repetitive flood events in Missouri history, according to the Missouri State Hazard Mitigation Plan (2010). There was also severe flooding in the state in 1994. There were five presidential disaster declarations for flooding in the state during this period; Cole County was included in Disaster Declaration #995 (July 9, 1993), Disaster Declaration #1023 (April 21, 1994), and Disaster Declaration #1054 (June 2, 1995).

After a Presidential Disaster Declaration, Public Assistance (PA) and/or Individual Assistance (IA) is made available through FEMA. Cole County was eligible for both PA and IA from Disaster Declarations #995 and #1054 and for IA from Disaster Declaration #1023.

All levees in Cole County failed during the Flood of 1993, according to the U.S. Army Corps of Engineers. Levee failure is discussed separately is included in Section 3.7.

Unincorporated areas of Cole County near the Missouri River and Osage River, along with Jefferson City, experienced elevated loss statistics during the Missouri River floods of 1993 and 1995 as compared with damages in the remainder of the county. The extent of the 1993 flooding is shown in Figure 3.5.3.

Figure 3.5.3



In addition to the river floods of 1993 and 1995, data from NOAA indicates numerous other flooding events in Cole County, with information on the damages sustained (see Figure 3.5.4a-b). The flood of 1995, for unknown reasons, is not included in the NOAA data set.

It is important to note that the total loss figure shown in the chart includes \$5 million in property damage and \$5 million in crop damage across 79 Missouri counties from the Missouri River flood of April 1994. The NOAA data indicates that \$500,000 property and \$500,000 crop damage occurred in the Jefferson City area from flash flooding in this period. Whether some of the other loss reported for the 79 counties occurred in Cole County is not indicated in the NOAA data.

| Figure 3.5.4a Cole County Historic Flood Data (4/10/1994-6/30/2010) | | | | | | | | |
|--|--------------------------|---------------------------|--------|----------|--------------------|----------------|--|--|
| Location | Date | Туре | Deaths | Injuries | Property Damage | Crop Damage | | |
| Jefferson City (Wears Creek; Highway 54 SW of Jefferson City; numerous county roads) | 4/10/1994 - 4/12/1994 | Flash Flood | 0 | 0 | 500K | 500K | | |
| 79 counties and City of St. Louis | 4/11/1994 - 4/19/1994 | River Flood | 0 | 0 | 5.0M | 5.0M | | |
| 20 counties and the City of St. Louis | 5/1/1996 - 5/31/1996 | Flood | 0 | 0 | 0 | 0 | | |
| Countywide | 5/6/1996 | Flash Flood | 0 | 0 | 0 | 0 | | |
| Jefferson City area (several homes evacuated) | 6/22/1997 | Flash Flood | 0 | 0 | 0 | 0 | | |
| Countywide (Jefferson City - Highway50/63; Moreau River; numerous low-water crossings) | 6/4/1998 | Flash Flood | 0 | 0 | 0 | 0 | | |
| North Portion of County | 7/4/1998 | Flash Flood | 0 | 0 | 0 | 0 | | |
| Countywide | 7/26/1998 | Flash Flood | 0 | 0 | 5K | 0 | | |
| North Portion of County (Elston - Gray's Creek; county roads) | 7/29/1998 | Flash Flood | 0 | 0 | 0 | 0 | | |
| Countywide (Rock House Rd. W of Russellville; Rte. D between Russellville and Highway 54) | 10/5/1998 - 10/6/1998 | Flash Flood | 0 | 0 | 0 | 0 | | |
| 11 counties | 10/6/1998- 10/12/1998 | Flood | 0 | 0 | 0 | 0 | | |
| Countywide (Jefferson City - several streets impassable) | 5/4/1999 | Urban/Small Stream Fld | 0 | 0 | 0 | 0 | | |
| North Portion of County | 5/27/2000 | Flash Flood | 0 | 0 | 0 | 0 | | |

| Figure 3.5.4b Cole County Historic Flood Data (4/10/1994-6/30/2010) | | | | | | | |
|--|--------------------------|---------------------------|--------|----------|--------------------|----------------|--|
| Location | Date | Туре | Deaths | Injuries | Property Damage | Crop Damage | |
| Jefferson City | 4/3/2001 | Urban/Small Stream Fld | 0 | 0 | 0 | 0 | |
| 11 counties | 6/4/2001 - 6/13/2001 | Flood | 0 | 0 | 0 | 0 | |
| 9 counties | 5/8/2002 - 5/28/2002 | Flood | 0 | 0 | 0 | 0 | |
| County (Moreau River) | 5/8/2002 - 5/18/2002 | Flood | 0 | 0 | 0 | 0 | |
| Countywide | 5/9/2002 | Flash Flood | 0 | 0 | 0 | 0 | |
| Countywide | 5/12/2002 - 5/13/2002 | Flash Flood | 0 | 0 | 0 | 0 | |
| Countywide | 1/12/2005 - 1/13/2005 | Flash Flood | 0 | 0 | 0 | 0 | |
| Jefferson City to Osage City (Missouri River) | 5/8/2007 - 5/20/2007 | Flood | 0 | 0 | 2K | 0 | |
| NW of Wardsville to Jefferson City (Meadows Ford Road; Murphys Ford Road; numerous other secondary roads) | 4/10/2008 | Flash Flood | 0 | 0 | 1K | 0 | |
| Marion area (Highway 179) | 6/13/2008 | Flash Flood | 0 | 0 | 1K | 0 | |
| Jefferson City to NW of Schubert (numerous roads, low-water crossings, streets in Jefferson City) | 9/20/2009 | Flash Flood | 0 | 0 | 0 | 0 | |
| Jefferson City to N/NE of Elston (Scrivner, Loesch and Bainer Roads) | 11/15/2009 | Flash Flood | 0 | 0 | 0 | 0 | |
| Jefferson City to 3 miles SSE | 4/24/2010 | Flash Flood | 0 | 0 | 0 | 0 | |
| Cole County (Missouri River) | 6/9/2010 | Flood | 0 | 0 | 0 | 0 | |
| TOTALS: | | | 0 | 0 | 5.509M | 5.500M | |
| Source: http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms | | | | | | | |

Measure of Probability and Severity

Probability: High – Cole County (unincorporated area), Jefferson City, Lohman, St. Martins,

Taos, Wardsville

Low – Russellville, St. Thomas, Cole County R-V, Jefferson City Public Schools,

Lincoln University

Severity: High – Cole County (unincorporated area), Jefferson City, Lohman, St. Martins,

Taos, Wardsville

Low – Russellville, St. Thomas, Cole County R-V, Jefferson City Public Schools,

Lincoln University

Existing Mitigation Activities

National Flood Insurance Program (NFIP)

The National Flood Insurance Act of 1968 established the National Flood Insurance Program (NFIP) to help reduce losses from flood and encourage wise development. Communities participating in the NFIP agree to adopt and enforce floodplain management ordinances to reduce risks to new and improved structures in Special Flood Hazard Areas. (A Special Flood Hazard Area (SFHA) is an area of land that has a 1% chance of being inundated by a flood in any given year; this area is also called the "base flood" or commonly referred to as the "100-year flood" area.)

Participation in the NFIP makes federal flood insurance available to property owners in the community. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods.

The status of mapping and NFIP participation in the Planning Area is shown in Figure 3.5.5. Flood Hazard Boundary Maps (FHBMs) were the original type of maps used; currently, the mapping is being done on Flood Insurance Rate Maps (FIRMs.)

FEMA has mapped SFHAs and other flood zones throughout the U.S. and its territories. Not every community has a Special Flood Hazard Area; resultantly, not every community has been mapped and issued a FHBM or FIRM.

| Fig. 3.5.5 | | | | | | | | |
|--|----------------|-------------------------|-------------------------|----------------------|-----------------------|--|--|--|
| Current NFIP Status of Communities in Planning Area | | | | | | | | |
| Participating Participating | | | | | | | | |
| CommID (CID) | Jurisdiction | Init FHBM Identified | Init FIRM Identified | Curr Eff Map Date | Reg- Emerg Date | | | |
| 290107 | Cole County | 12/16/1980 | 12/15/1981 | 12/2/2005 | 01/21/1982 | | | |
| 290108 | Jefferson City | 03/15/1974 | 04/15/1980 | 12/2/2005 | 04/15/1980 | | | |
| 290633 | Wardsville | 07/11/1975 | 12/2/2005 | 12/2/2005 | 12/2/2005 | | | |
| Not Participating | | | | | | | | |
| CommID (CID) | Jurisdiction | Init FHBM Identified | Init FIRM Identified | Curr Eff Map Date | Sanction Date* | | | |
| 295322 | Lohman | | 12/2/2005 | 12/2/2005 | 12/2/2006 | | | |
| 290659 | Russellville | | | | | | | |
| 295323 | St. Martins | | | | | | | |
| 290469 | St. Thomas | | | | | | | |
| 290876 | Taos | 03/04/1980 | 08/19/1986 | 12/2/2005 | 03/04/1981 | | | |
| * Sanction Date indicates the date that a community decided not to participate in the NFIP (or was suspended for noncompliance). | | | | | | | | |

Participation in the National Flood Insurance Program is a critical aspect of hazard mitigation planning for it provides communities with planning resources that can be used for controlling the potentially devastating impacts of floods. Furthermore, participation in the program helps communities more easily recover from flood impacts.

A summary of the NFIP insurance policies in the county is shown in Figure 3.5.6.

Sources: NFIP Community Status Book - http://www.fema.gov/fema/csb.shtm; FIRM maps (12/2/2005)

| Figure 3.5.6 | | | | | | | |
|--|--------------------|---------------------|--------------------|--|--|--|--|
| NFIP Policies in Cole County as of 7/31/2010 | | | | | | | |
| Community | Number of Policies | Amount Insured (\$) | Total Premium (\$) | | | | |
| Cole County | 98 | 12,946,500 | 57,537 | | | | |
| Jefferson City | 106 | 18,106,400 | 115,082 | | | | |
| Wardsville | 0 | 0 | 0 | | | | |
| Source: http://bsa.nfipstat.com/reports/1011.htm | | | | | | | |

County

As mentioned earlier in the flooding profile, Cole County posts a series of three signs at areas prone to flooding. The signs read: "Flood area ahead", "Impassable during high water", and "Do not enter when flooded".

Jefferson City

Jefferson City posts the sign "Prone to flash flooding" at flooding prone areas.

Lohman

The City of Lohman has installed diffusing rocks to slow runoff in vulnerable areas in the city. In addition, private citizens have built berms to help mitigate flood prone properties.

St. Martins

As of 2010, the City of St. Martins has hired an engineer to evaluate storm water drainage in the city.

Wardsville

Floodprone areas in the Village of Wardsville are posted with warning signs.

Other

The National Weather Service issues flooding hazard alerts according to following response levels which are broadcast through local media:

- Flood Watch Flash flooding or flooding is possible within a designated area.
- Flood Warning Flash flooding or flooding has been reported or is imminent.
- Flood Advisory Flooding of small streams, streets, and low lying areas, such as railroad underpasses and some urban drains is occurring.

Flood Vulnerability

Jurisdictions: The entire Planning Area is subject to potential flooding.

Cole County (unincorporated area), Jefferson City, Lohman, St. Martins, Taos, and Wardsville are all at risk from riverine flooding because they have area in the 100-year flood plain. Russellville, St. Thomas, Cole County R-V, Jefferson City Public Schools, and Lincoln University have a lower vulnerability to flooding because they are not in the 100-year flood plain. Neither of the school districts nor Lincoln University have buildings lying within the 100-year flood plain.

Structures not within designated floodplains are potentially vulnerable to the effects of flash flooding brought on by storm water or sheet flooding. Small-scale floods or flash flooding can impact a neighborhood or a city but are limited in their spatial extent.

Overview

Large-scale floods such as the 1993 flood are devastating events for entire regions of the country. Not only was Mid-Missouri impacted but the entire Midwest suffered large losses in life, property, and crop damage; effects carried over to the rest of the United States. Transit routes were disrupted, people lost jobs, and crops never made it to market.

Potential Impact on Existing Structures

Residents, structures, and infrastructure lying in or near the 100 year floodplain are all vulnerable to the effects of a major flood. The 100 Year Flood Boundaries for the Planning Area are shown in Figure 3.5.1. Portions of Jefferson City, Lohman, St. Martins, Taos, and Wardsville all lie within the 100 year flood plain (see Figures 3.5.7 - 3.5.17).

The impact on estimated exposed structures in these areas is shown in Figure 3.5.18.

Figure 3.5.7

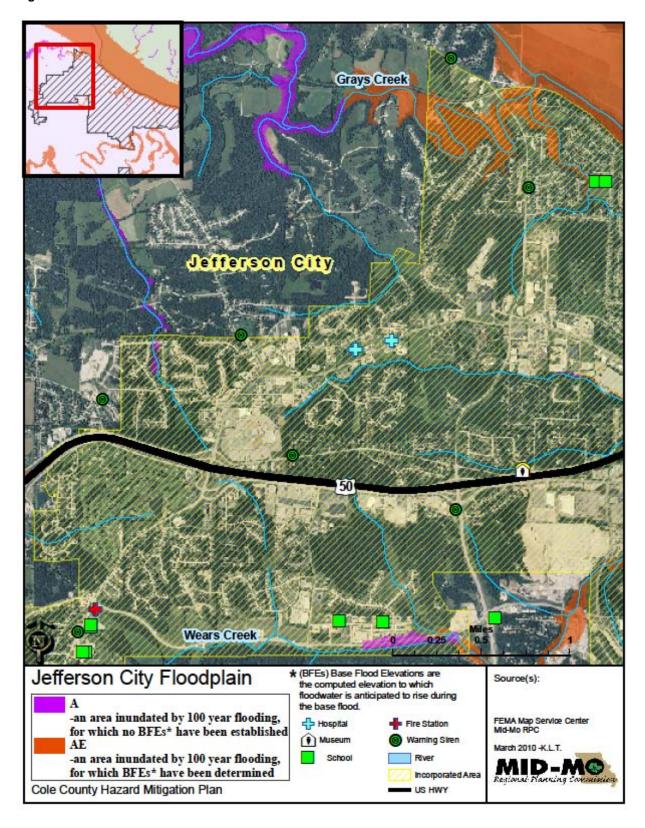


Figure 3.5.8

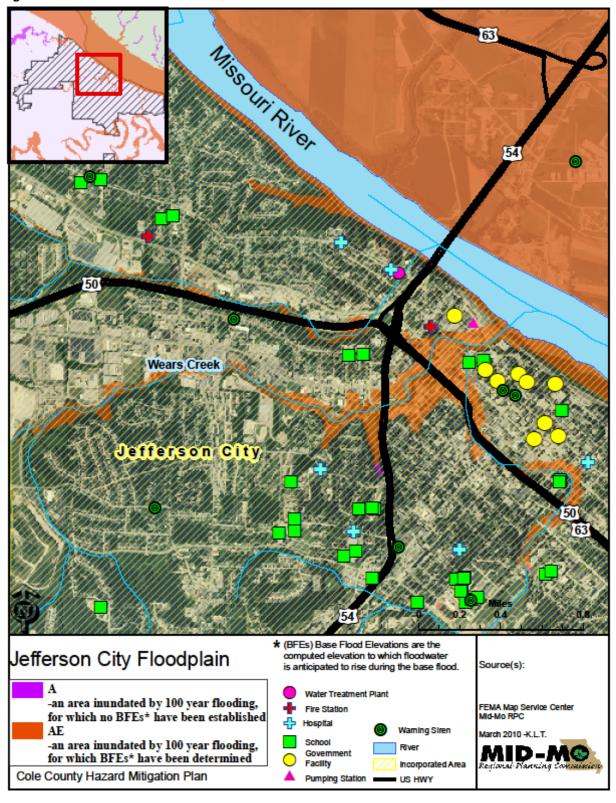


Figure 3.5.9

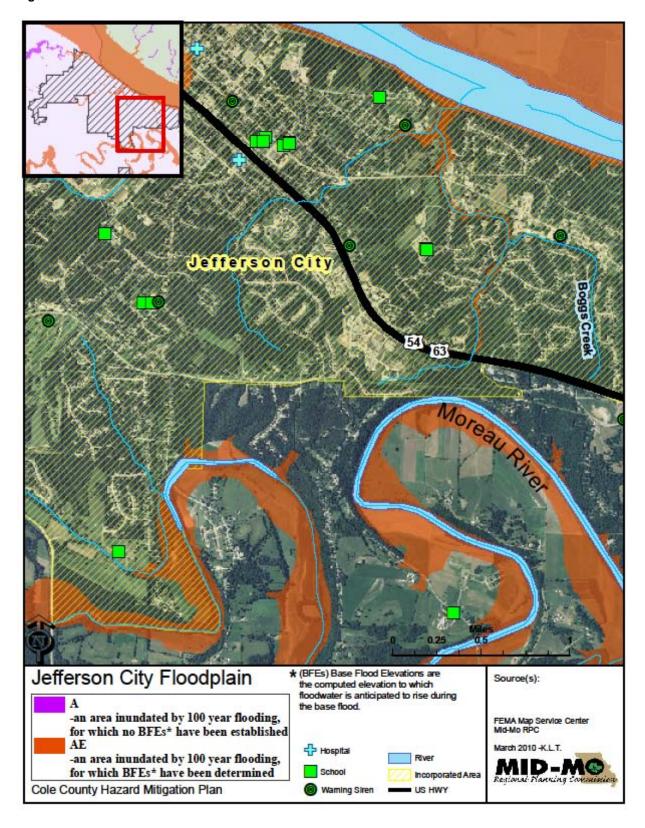


Figure 3.5.10

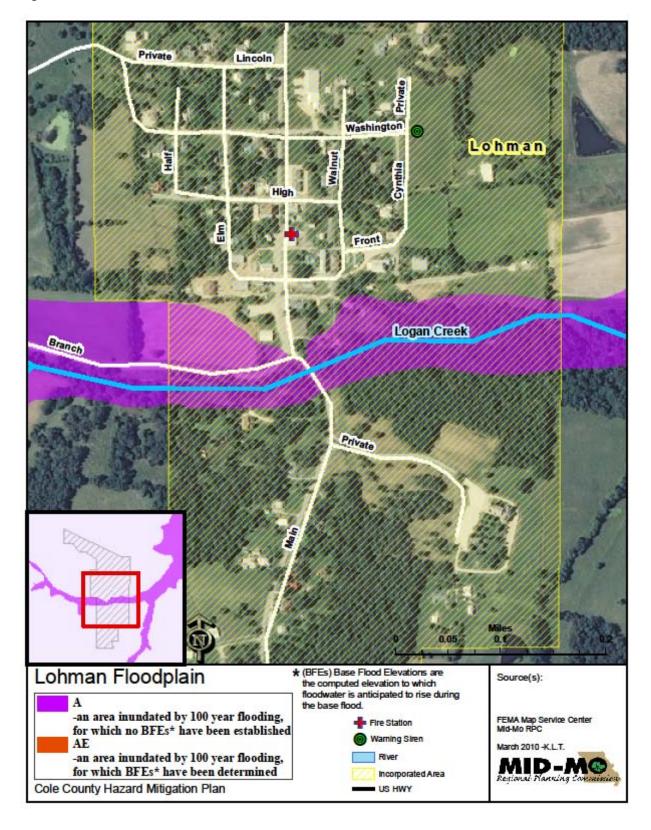


Figure 3.5.11

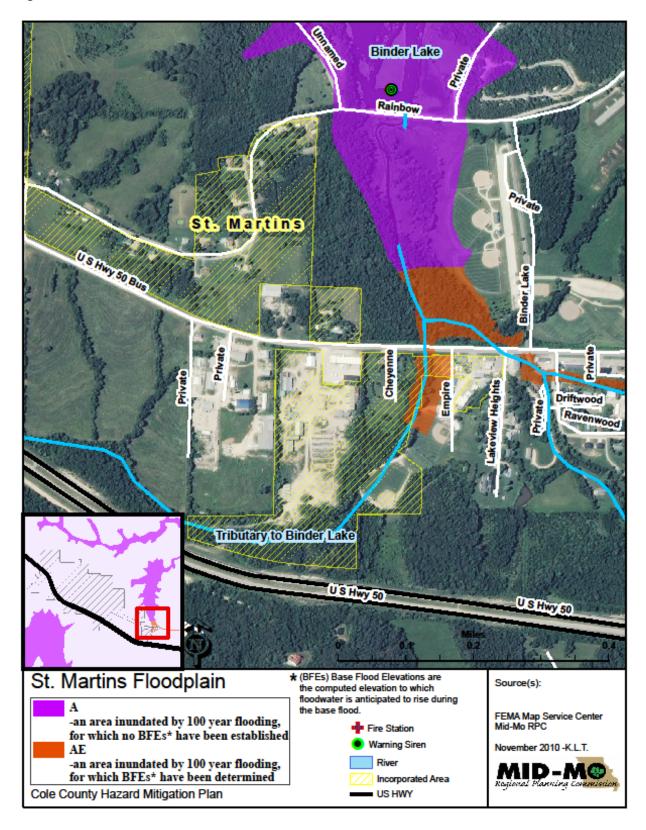


Figure 3.5.12

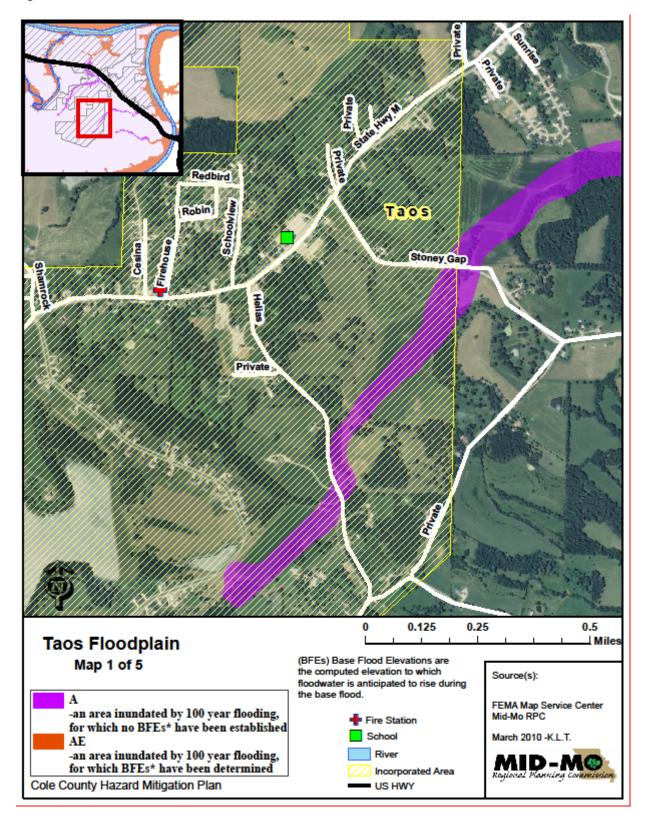


Figure 3.5.13

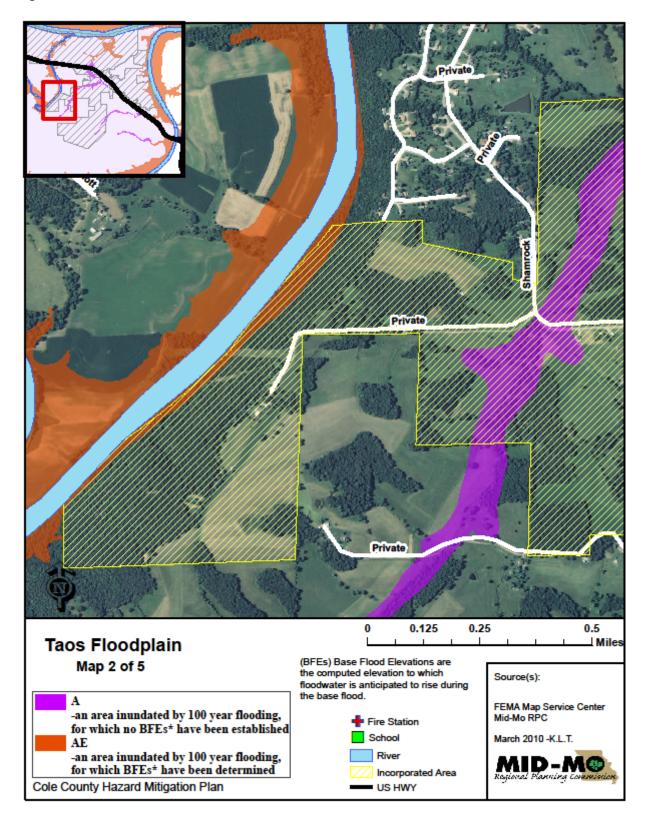


Figure 3.5.14

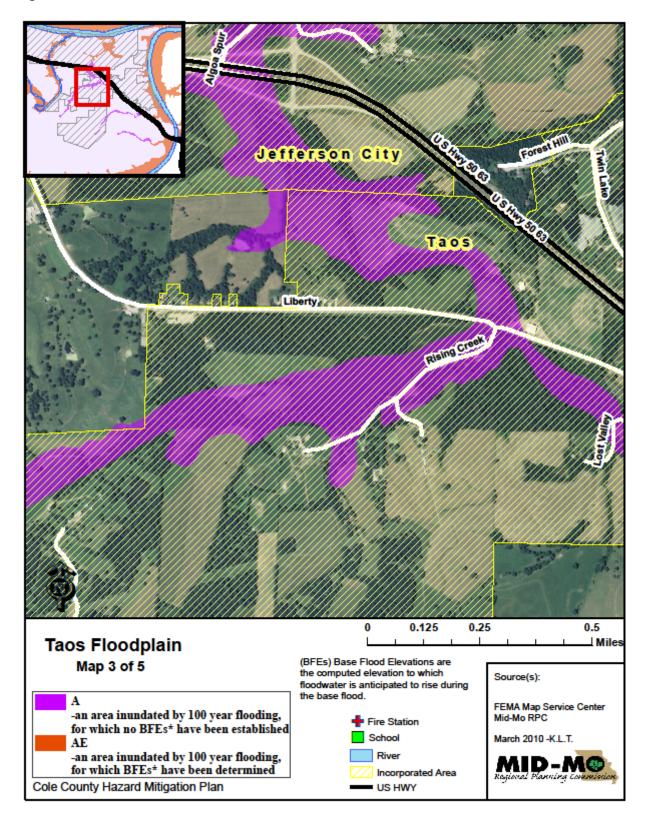


Figure 3.5.15

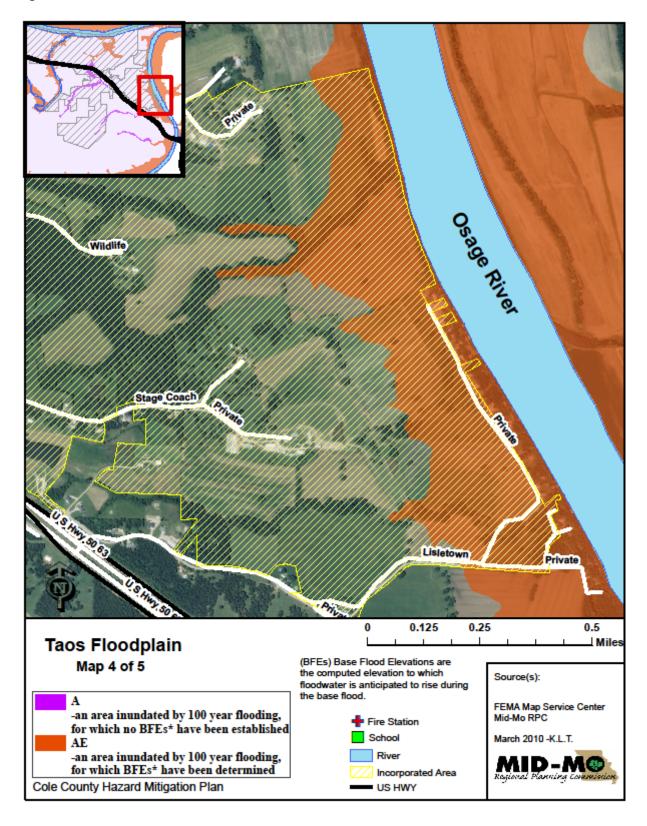


Figure 3.5.16

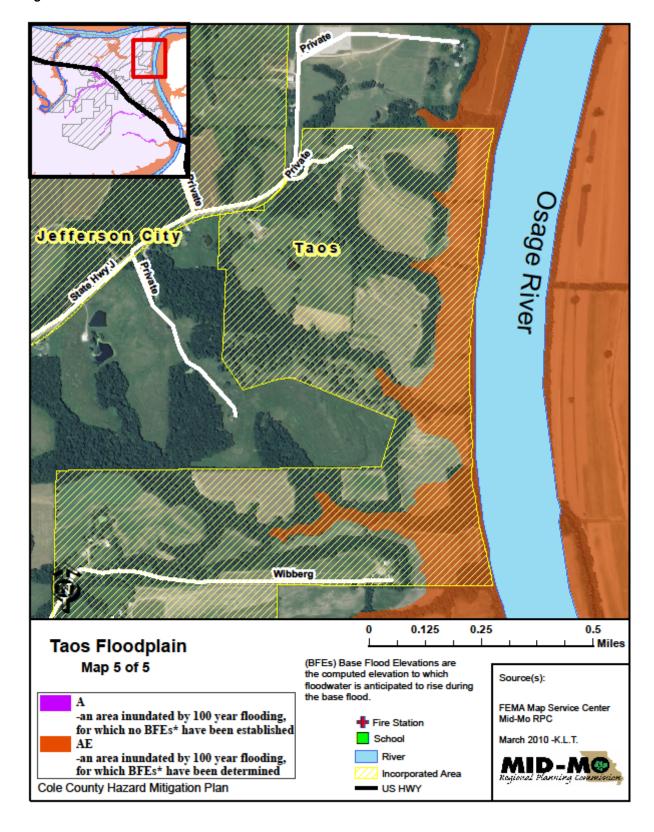


Figure 3.5.17

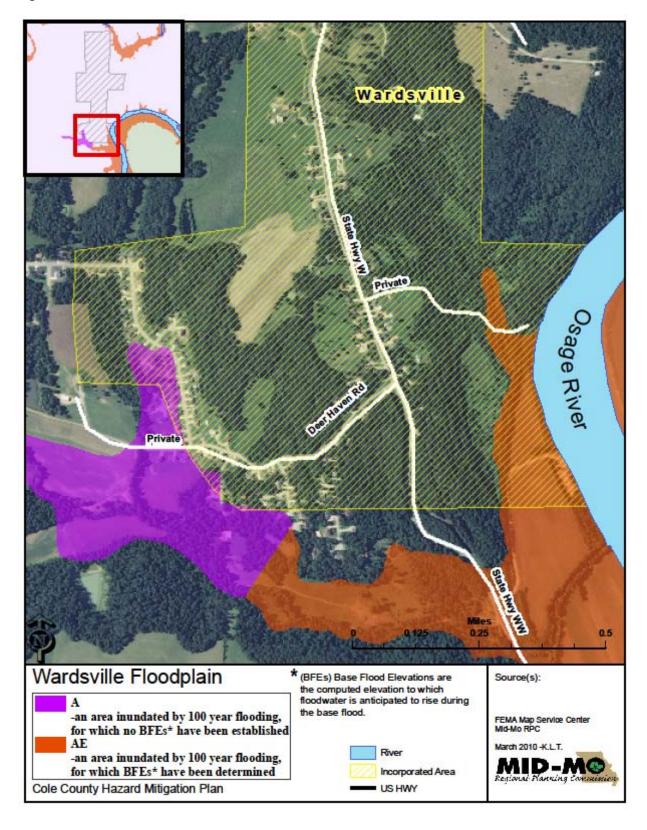
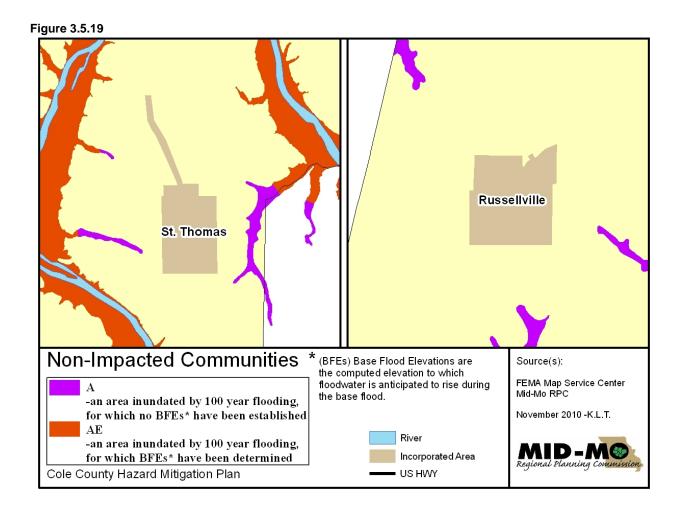


Figure 3.5.18 Estimated exposed structures

| Impact Assessment Flood | | | | | | | | | | |
|--|----------------------------------|--------------|------------|--------------|-----------|--------------|-------------|--|--|--|
| High Vulnerability = 10 - 100% of buildings impacted | | | | | | | | | | |
| | Maximum Calculated Impact (100%) | | | | | | | | | |
| | | | Building | Туре | | | | | | |
| Jurisdiction | Residential | Commercial | Industrial | Agricultural | Religious | Governmental | Educational | | | |
| Planning Area | 25436 | 1479 | 355 | 162 | 186 | 1120 | 46 | | | |
| Cole County (unincorporated areas) | 9774 | 363 | 135 | 104 | 30 | 14 | 8 | | | |
| Jefferson City | 13782 | 1023 | 190 | 43 | 147 | 1095 | 32 | | | |
| Lohman | 83 | 9 | 1 | 1 | 2 | 1 | 0 | | | |
| St. Thomas | 128 | 6 | 2 | 3 | 1 | 1 | 1 | | | |
| Taos | 324 | 12 | 6 | 0 | 1 | 2 | 1 | | | |
| Wardsville | 357 | 20 | 7 | 5 | 1 | 3 | 1 | | | |
| | Low V | ulnerability | = 0 - 5% | of building | gs impac | ted | | | | |
| | | Maximum | Calculat | ed Impact | (5%) | | | | | |
| | | | Building | Туре | | | | | | |
| Jurisdiction | Residential | Commercial | Industrial | Agricultural | Religious | Governmental | Educational | | | |
| Russellville | 21 | 1 | 0 | 0 | 0 | 0 | 0 | | | |
| St. Thomas | St. Thomas 6 1 0 0 0 0 0 | | | | | | | | | |
| HAZUS MH | HAZUS MH | | | | | | | | | |

Figure 3.5.19 depicts communities not impacted by the 100 year flood plain.



Potential Impact on Future Development

Impact on future development is directly related to floodplain management and regulations set forth by the county and individual communities.

National Flood Insurance Program (NFIP) Repetitive Loss Properties

| Doguiromont | [The risk assessment] must also address National Flood Insurance |
|----------------------------------|--|
| Requirement §201.6(c)(2)(ii): | Program (NFIP) insured structures that have been repetitively |
| | damaged by floods. |

The NFIP defines a **Repetitive Loss Property** as "any insurable building for which two or more claims of more than \$1,000 were paid by the National Flood Insurance Program (NFIP) within any rolling ten-year period, since 1978. At least two of the claims must be more than 10-days apart." A repetitive loss property may or may not currently be insured by the NFIP. An overview of repetitive loss properties and losses in Cole County is shown in Figure 3.5.20.

| Figure 3.5.20 | | | | | | | |
|--|--|--|--|--|--|--|--|
| Cole County Repetitive Loss Properties, 1978-2009 | | | | | | | |
| # of Properties # of Losses Total Paid Average Payment | | | | | | | |
| 30 115 \$2,211,416 \$19,230 | | | | | | | |
| Source: Missouri State Hazard Mitigation Plan | | | | | | | |

A **Severe Repetitive Loss (SRL)** property is defined as a single family property that is covered under an NFIP flood insurance policy and:

- (a) has had at least four NFIP claim payments (including building and contents) over \$5,000 each, with the cumulative amount of the claims payments exceeding \$20,000; or
- (b) for which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any ten-year period, and must be greater than 10 days apart.

There are three (3) Severe Repetitive Loss Properties in Cole County, according to the Missouri State Hazard Mitigation Plan (2010).

It is clear that repetitive losses from flooding have taken their toll in the Planning Area. The situation would currently be much worse, however, without the large number of flood buyouts that took place in Jefferson City after the 1993 through the Missouri Flood Buyout Program.

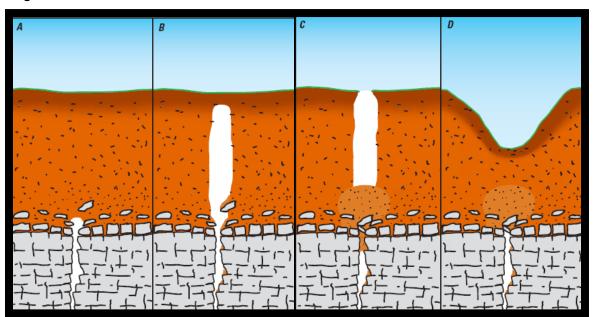
According to information from SEMA, 94 properties were acquired with Hazard Mitigation Grant Program (HMGP) funds, 34 properties with a combination of HMGP and Community Development Block Grant (CDBG) funds, and 34 properties with CDBG funds. Many of these properties were in the Callaway County part of Jefferson City, the area formerly known as Cedar City. The story of these buyouts, an excerpt from <u>Stemming the Tide of Flood Losses</u>, <u>Stories of Success from The History of Missouri's Flood Mitigation Program</u> (published by Missouri SEMA), is included in Appendix I, along with the locations of the flood buyout properties.

3.6 Land Subsidence/ Sinkhole

Description of Hazard

The Missouri State Hazard Mitigation Plan (2010) gives the following definition for land subsidence and sinkholes: "Land subsidence is sinking of the earth's surface due to the movement of earth materials below the surface....In the case of sinkholes, the rock below the surface is limestone, carbonate rock, salt beds, or some other rock that can be naturally dissolved by circulating groundwater." Figure 3.6.1 shows how a sinkhole can develop. According to the Missouri Department of Natural Resources (DNR), sinkholes can occur due to human activities such as construction excavation, well drilling, or mining operations. These activities can cause shifts in buoyancy and/or disturb subsurface voids. Sinkholes vary in size and can potentially cause damage to roads, water/sewer lines, buildings, and lagoons.

Figure 3.6.1



Formation of collapse—Soil bridges gap where sediment has been washing into a solution enlarged fracture, A. Over time, the void migrates upward through the soil, B. After the bridge thins, a sudden collapse, C, often plugs the drain and erosion will, after many years, transform the collapse into a more bowl-shaped sinkhole, D.

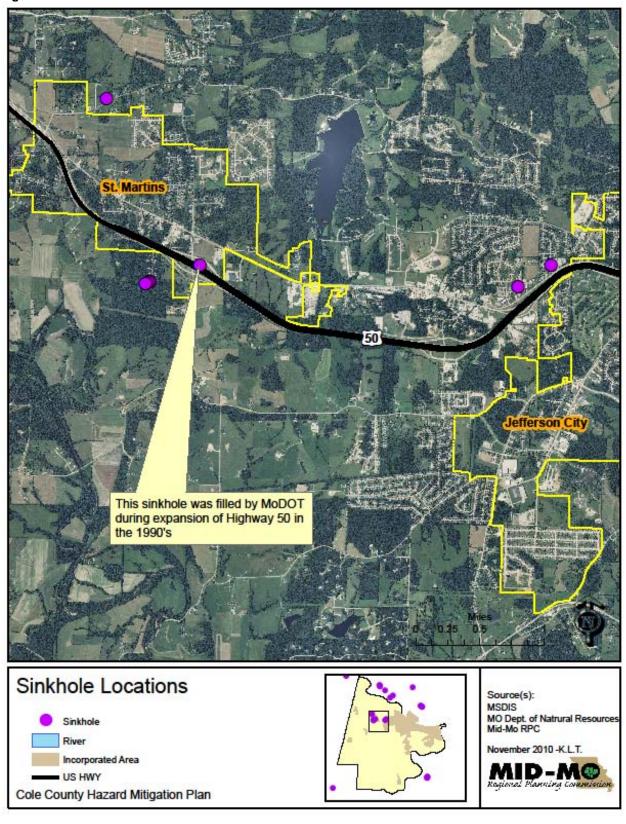
-By James E. Kaufmann Source: US Geological Survey

Geographic Location

The only known sinkhole areas in the Planning Area are in unincorporated Cole County, along Highway 50, between Jefferson City and St. Martins (see Figure 3.6.2). It should be noted that although the map shows a sinkhole located within the City of St. Martins, this sinkhole was filled during the construction of Highway 50 and is now part of the right-of-way of the highway, according to city officials from St. Martins.

It is important to note that future sinkhole development has the potential to occur near these areas and also in other areas that have no developed sinkholes. Gradual or sudden land subsidence is a key sign of sinkhole formation.

Figure 3.6.2



Previous Occurrences

There have been no *recorded* recent occurrences of sinkhole collapse in Cole County. Just because no occurrences have been recorded does not mean that they have not happened. Previous occurrences of sinkhole development in other parts of Missouri with similar geologic features are a source of concern.

According to the Missouri DNR, sewage lagoons in West Plains and Republic in Southern Missouri were drained of their contents due to the development of sinkholes. Sinkholes drain directly into underground water sources and can impact or pollute area water sources.

In West Plains, sinkholes had drained the lagoon twice before the final collapse; local officials had tried to patch the collapses with cement and other materials. The final collapse in 1978 resulted in sewage draining directly into underground water sources. Mammoth Spring in Arkansas was contaminated and more than 800 local residents reported illness, according to the Missouri DNR. While this occurred in Southern Missouri, the potential exists for a similar situation occurring in the Planning Area.

Measure of Probability and Severity

Probability: Low

Severity: Low (severity may be higher if contamination occurs)

Existing Mitigation Strategies

Currently, Cole County is working on the creation of a stormwater ordinance that would help mitigate the contamination of sinkhole areas and possibly limit construction in sensitive areas.

Land Subsidence /Sinkhole Vulnerability

Jurisdictions: Entire Planning Area; greater risk in Cole County (unincorporated areas)

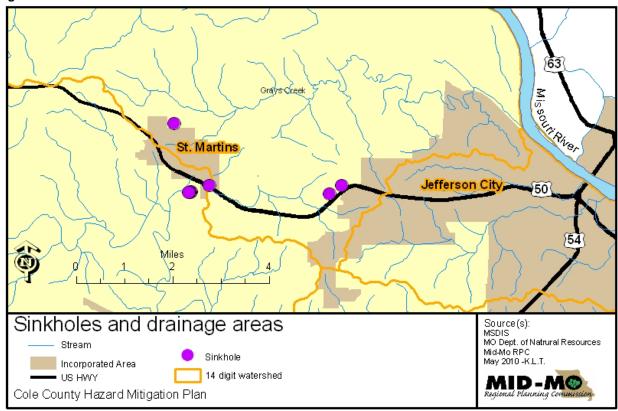
Overview

The only known sinkhole areas in the Planning Area are in unincorporated Cole County, along Highway 50, between Jefferson City and St. Martins. It is important to note the potential for future sinkhole development near these areas and in other areas which presently do not have developed sinkholes. Gradual or sudden land subsidence is a key sign of sinkhole formation.

As mentioned previously, the sinkhole shown within the City of St. Martins was filled during the construction of Highway 50 and is now part of the right-of-way of the highway. St. Martins officials indicated that the mapped sinkhole immediately north of their city boundary was formerly a coal mining hole; it is now a farm cattle pond. The officials also noted that no one in St. Martins is aware of any current sinkholes or sinkhole problems in the past.

Figure 3.6.3 shows the watersheds affected by the known sinkhole areas in the Planning Area. It is important to note that due to the nature of karst topography some of the karst sinkhole areas may drain into watersheds other than the ones in which they are located. This makes the impact of pollutants in these areas harder to quantify. Some drainage patterns have been mapped using dye tracing and information on that mapping is available from the Missouri Department of Natural Resources.





Potential Impact on Existing Structures

Due to the unpredictability of sinkhole collapse, there is no direct way to assess a cost impact for this hazard. Vulnerable structures, roads, or property could potentially be impacted by a sudden and usually localized drop in elevation. The resulting damage incurred from the sinkhole could result in broken roads, building collapse, compromises to water sources, environmental impacts, and/or loss of life. While loss of life could occur, it would most likely be minimal.

Potential Impact on Future Development

It is difficult to assess the effects of sinkholes on future development because sinkhole development is unpredictable and few sinkhole areas have been identified in the Planning Area. However, it should be noted that future development can affect the impact of this hazard. Construction of septic tanks, lagoons, and structures can cause shifts in soil and may plug or disturb karst areas allowing for the formation of a sinkhole. Also, soil disturbance can cause the drainage pattern to change, which may lead to blockage of a sinkhole and potentially cause flooding.

3.7 Levee Failure

Description of Hazard

A levee is defined by the National Flood Insurance Program as "a man-made structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide protection from temporary flooding."

Levee failure, according to FEMA, can occur by the following means:

- **Overtopping** When a large flood occurs, water can flow over a levee. Called overtopping, the stress exerted by flowing water can cause rapid erosion.
- **Piping** Levees are often built over old stream beds. Flood waters will follow these sub grade channels causing a levee to erode internally thereby allowing flood waters to rupture the levee structure.
- **Seepage and Saturation** If flood waters sit up against a levee for a long period, the levee may become saturated and eventually collapse.
- **Erosion** Most levees are constructed of sand or soil which erodes easily under high-velocity flood waters.
- **Structural Failures** Lack of regular maintenance is a key reason levees fail at gates, walls or closure sites.

Federally authorized levees are typically designed and built by the US Army Corps of Engineers in cooperation with a local sponsor and then turned over to the local sponsor to operate and maintain.

Non-federal levees are designed, built, and managed by a non-federal entity.

There is no single agency with responsibility for levee oversight. The Corps of Engineers has specific and limited responsibilities for approximately 2,000 levees nationwide.

The responsibilities of local levee owners or sponsors are broad and may include levee safety; land use planning and development; building codes; and operations, maintenance, repair, rehabilitation and/or replacement of the levee. The certification of levees for FEMA's National Flood Insurance Program is the responsibility of the local levee owner or sponsor.

Federally authorized and some non-federal levees may be eligible for Corps of Engineers rehabilitation assistance funding.

Geographic Location

There are three major levees in the Planning Area (see Figure 3.7.1 and 3.7.2). Two of these levees are located in the jurisdiction of Cole County (unincorporated area) and one is in Jefferson City. Cole Junction Levee and the Prison Farm Levee protect agricultural land in the northern portion of the county between Highway 179 and the Missouri River; the Capitol View Drainage District protects infrastructure on the north side of the Missouri River in the Callaway County portion of Jefferson City.

All three major levee systems in the Planning Area are part of the U.S. Army Corps of Engineers Rehabilitation Program and are currently eligible for levee rehabilitation assistance should they receive damage during a flood event.

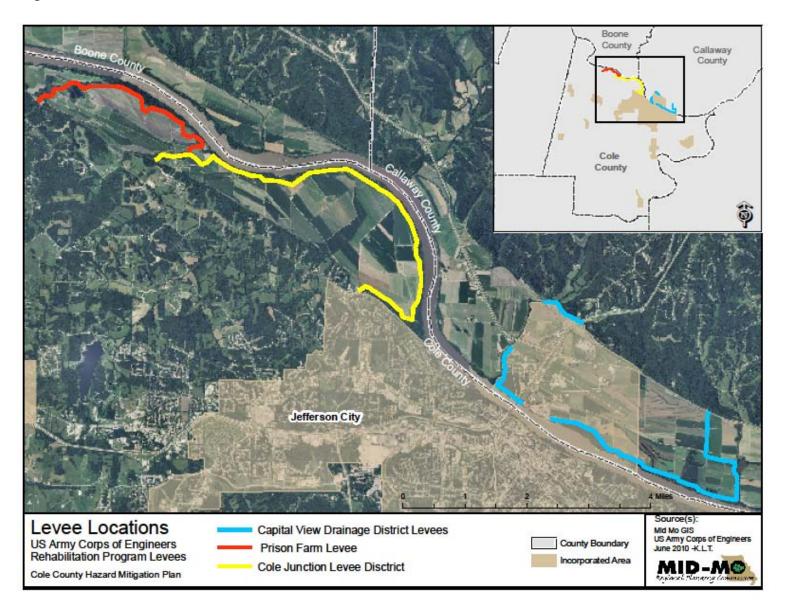
| Figure 3.7.1 | | | | | | | |
|-----------------------------------|--|--------------------|--|--|--|--|--|
| US Arm | ny Corps of Engineers Rehabilitation Program Levees | | | | | | |
| Levee Name | Sponsor | Acres Protected | | | | | |
| Capitol View Drainage District | Capital View Drainage District (Callaway County Circuit Court) | ~2800 | | | | | |
| Cole Junction Levee | Cole Junction Levee District (Cole County Circuit Court) | 2600 | | | | | |
| Prison Farm Levee | MO Department of Corrections and Human Resources | 1200 | | | | | |

There are other, privately owned, levees in the Planning Area; official data on the locations of these private levees is not available. These privately owned levees are maintained by their owners and are not part of any federal rehabilitation program. Tracking of levee conditions is a point of concern, especially because there are so many of these privately owned levees.

"Operations and Maintenance is important to levee safety, but it is not the only factor that affects risk and reliability of a levee, and should not be represented as such. It is important to note, there is still a large universe of private and other non Corps levees that have not been inventoried or inspected/assessed. We don't know the size of this universe, where the levees are located, their condition, or the consequences of failure, loss of life being of paramount concern."

– US Army Corps of Engineers

Figure 3.7.2



The locations of the major levees in Figure 3.7.2 were drawn using data provided by the US Army Corp of Engineers, Cole County, and 2009 National Agricultural Inventory Program (NAIP) imagery. Currently, levee locations have not been digitized statewide.

Previous Occurrences

According to the US Army Corps of Engineers, all levees in Cole County and most of the surrounding counties failed during the 1993 Flood, resulting in the inundation of land and structures being protected.

Structures that were affected by the levee breach include the Jefferson City Airport, Cedar City (now annexed by Jefferson City), the Jefferson City Wastewater Treatment Plant, and several residences and businesses. All of these inundated areas are within the boundary of the Capitol View Drainage District.

Measures of Probability and Severity

Probability: Moderate Severity: Moderate

Existing Mitigation Strategies

The US Army Corps of Engineers oversees the inspection of the Cole Junction Levee and Prison Farm Levee Districts; it is up to the owner or sponsor to inspect and fix their levees.

Most areas behind the three major levees in the Planning Area are in designated floodplains and new construction must meet either Cole County or Jefferson City floodplain regulations, depending on the jurisdiction involved.

Levee Failure Vulnerability

Jurisdictions: Cole County (unincorporated areas) near the Missouri River, Jefferson City north of the Missouri River.

Cole County R-V School District, Jefferson City Public Schools, and Lincoln University are not vulnerable to the hazard of levee failure.

Overview

The three main levees in the Planning Area will be addressed in this assessment. Vulnerability assessments are not being completed for the private levees in the Planning Area due to the lack of official data on their locations.

All three levees in the Planning Area are agricultural levees. Agricultural levees are usually built to withstand a 50 year flood but these three levees fall well below that protection level at 10 to 25 year flood event levels. Specific protection information is shown in Figures 3.7.3 -3.7.6.

Figure 3.7.3

Cole Junction Levee District

Levee Embankment Data

LEVEE DESIGNED GAGE FUNCTION READING/STATION: 33.5' Jefferson City Gage

LEVEL OF PROTECTION PROVIDED: Exceeds a 25-year flood event

AVERAGE HEIGHT OF LEVEE: 10' to 16'
AVERAGE CROWN WIDTH: 8' to 14'
AVERAGE SIDE SLOPE: 1 on 3 to 1 on 4
ANNUAL MAINTENANCE COSTS: \$7.500.00

Protected Features

TOTAL ACRES PROTECTED: 2,600

TOTAL AGRICULTURAL PRODUCTION ACRES PROTECTED: 2,580

TOWNS: 0
BUSINESSES: 0
RESIDENCES: 0

ROADS: Approximately 5 miles of gravel surfaced County roads.

UTILITES: Approximately 2.5 miles of overhead power lines, approximately 1.8 miles of fiber optic lines, and approximately 3.5 miles of underground electric lines.

BARNS: 5

MACHINE SHEDS: 4 OUTBUILDINGS: 0 IRRIGATION SYSTEMS: 0

GRAIN BINS: 0

OTHER FACILITIES: Approximately 5 miles of MO Pacific Railroad embankment, State

Prison wastewater treatment plant and a FAA airplane guidance system.

This levee is sponsored by the Circuit Court of Cole County and was last inspected on January 26th, 2005. Information about this Levee District can be obtained by contacting: President, Mr. Paul LePage, 573-893-5240

Figure 3.7.4

Prison Farm Levee

Levee Embankment Data

LEVEE DESIGNED GAGE FUNCTION READING/STATION: 29.0' Jefferson City Gage

LEVEL OF PROTECTION PROVIDED: Exceeds a 10-year flood event

AVERAGE HEIGHT OF LEVEE: 10' to 14' **AVERAGE CROWN WIDTH:** 12' to 16'

AVERAGE SIDE SLOPE: L/S: Ranges from 1 on 3 to 1 on 6; Riverside slope 1 on 3

ANNUAL MAINTENANCE COSTS: \$3,000.00

Protected Features

TOTAL ACRES PROTECTED: 1,200

TOTAL AGRICULTURAL PRODUCTION ACRES PROTECTED: 1,000

TOWNS: 0 BUSINESSES: 0 RESIDENCES: 0

ROADS: Approximately 2.00 miles of gravel surfaced farm service roads.

UTILIITES: 0
BARNS: 0

MACHINE SHEDS: 0 OUTBUILDINGS: 0

IRRIGATION SYSTEMS: 0

GRAIN BINS: 0 **OTHER FACILITIES:**

This levee is sponsored by the Missouri Department of Corrections and Human Resources and was last inspected on January 4th, 2005. Information about this Levee District can be obtained by contacting: Mr. John Scott, 573-522-2905.

Figure 3.7.5

Capital View Drainage District

Levee Embankment Data

LEVEE DESIGNED GAGE FUNCTION READING/STATION: 31.0'(+) Jefferson City gage

LEVEL OF PROTECTION PROVIDED: Provides protection for a 10-year flood event **AVERAGE HEIGHT OF LEVEE:** 3' to 12' above landside natural ground surface

AVERAGE CROWN WIDTH: 10' to 14'

AVERAGE SIDE SLOPE: L/S: Ranges from 1 on 3 to 1 on 6

R/S: Ranges from 1 on 3 to 1 on 6

ANNUAL MAINTENANCE COSTS: Approximately \$5,000.00

Protected Features

TOTAL ACRES PROTECTED: 2,855 (1,355 Acres within this taxation District)

TOTAL AGRICULTURAL PRODUCTION ACRES PROTECTED:

2,300 (900 Acres within this taxation District)

TOWNS: I North Jefferson City (formerly Cedar City)

BUSINESSES: 20

RESIDENCES: 5 (Occupancy varies)

ROADS: Approximately 2.00 miles of State Highway Route 94, approximately 3.00 miles of old

State Highway Route 94, approximately 2.00 miles of asphalt surfaced County roads,

approximately 0.5 mile of State Highway Route W and approximately 0.4 mile of gravel surfaced

City roads.

UTILITES: Undetermined amount of utility lines, water system lines, gas lines and sewer lines.

BARNS: 0

MACHINE SHEDS: 3 **OUTBUILDINGS:** 7

IRRIGATION SYSTEMS: 2

GRAIN BINS: 1

OTHER FACILITIES: Jefferson City Memorial Airport, Missouri Air National Guard Facility, Jefferson City Wastewater Treatment Plant, Cedar City Lions Club Building and Corley Park, Jefferson City Part pavilion and baseball fields and approximately 3.00 miles of Katy Trail State Park.

The Capitol View Drainage District (CVDD) was reformed in December 2009 with the inclusion of the former Cedar City Drainage District. The memorandum for this consolidation can be found in Appendix J of this plan. Exact numbers on protected acres and property are still being calculated by the CVDD Board.

This levee is sponsored by the Circuit Court of Callaway County and was last inspected on January 22nd, 2006. Information about this Levee District can be obtained by contacting: Chairman, Mr. Dave Boessen, 573-634-4666.

(The data in Figures 3.7.3-3.7.5 is from information provided by Engineer Cliff Sanders of the US Army Corps of Engineers in Glasgow, MO. The data includes protected area information from a "Supplemental Levee Inspection Information" form collected during the last inspections in 2005 and 2006.)

Potential Impact on Existing Structures

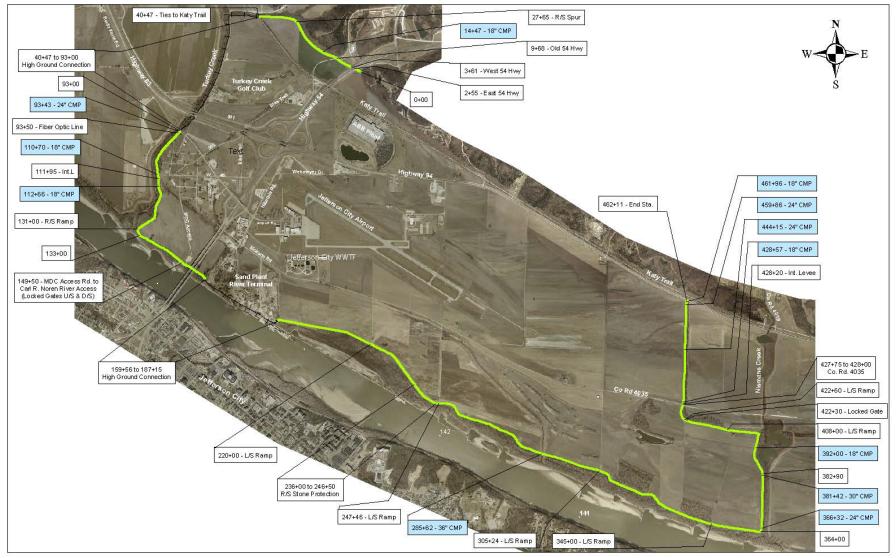
Structures in Cole County that would be vulnerable to the effects of levee failure would include those that lie in areas in or near the Missouri River floodplain and its tributaries. Since the 1993 Flood many structures have been relocated, bought out, abandoned, elevated, or remodeled; this has reduced the amount of vulnerable structures and people in areas where levees could potentially fail.

The Capitol View Drainage District protects two important facilities for Jefferson City along with several businesses, a few homes, and farmland. The Jefferson City Waste Water Treatment Facility and the Jefferson City Memorial Airport are both protected by this levee. Figure 3.7.6 was provided by the US Army Corps of Engineers and shows the drainage district and information about levee.

Potential Impact on Future Development

Impact on future development is directly related to floodplain management and regulations set forth by the county and individual communities through levee management and regulations which are not clearly defined. Because most private levees in Cole County are not regulated or inspected by any one agency it is difficult to predict what path future development will follow. It is important to note that levees in Cole County are located in designated floodplains. This means that all new construction in these areas fall under Cole County's construction and zoning regulations and must adhere to that coding.

Figure 3.7.6



Capital View Drainage District Item 36B

Jan 1 any 2010

3.8 Severe Winter Weather

Description of Hazard

Cole County experiences at least one winter storm almost every year; certain years are particularly notable for their storm frequency and/or intensity. Winter storms in central Missouri contain ice, snow, severe cold, sleet, and wind; each of these has the potential to disrupt life in the region by making normal activity difficult and/or dangerous.

Winter storms pose a threat to central Missouri by creating disruptions in electricity, telephone, and other critical infrastructures. Employees may be unable to get to work due to icy conditions, unplowed roadways, disruptions in transportation services, or facility damage. A shortage of supplies may ensue with a longer stretch of severe winter weather.

Snowstorms do not generally impact the region for long periods of time but ice storms have shut down schools and businesses for extended periods. Ice is also the biggest threat to reliable power and phone service.

Geographic Location

The entire Planning Area is at risk from Severe Winter Weather.

Previous Occurrences

Cole County experienced 36 officially recorded winter storms or periods of extreme cold in the period 1994-2009, according to data from NOAA and FEMA. During this period, there was only one year (2001) when a severe winter storm was not reported; in most years, there was more than one severe winter storm reported. Figure 3.8.1 summarizes available NOAA data for these storms and includes additional information from SEMA Situation Reports.

Severe winter weather typically moves through a large area. The number of counties affected by a storm is indicated in Figure 3.8.1 for those storms where deaths, injuries, and/or costs are reported. The deaths, injuries, and estimated costs reflect all counties in Missouri affected by the severe winter weather. None of the deaths associated with these severe winter weather events occurred in Cole County; information on the locations of the injuries was not available. While it can be seen from the data that severe winter weather can result in great financial cost, the exact cost of these storms to Cole County was not available in the data.

More cost information is available for storms for which Presidential Disaster Declarations were made. After a Presidential Disaster Declaration, Public Assistance (PA) and/or Individual Assistance (IA) is made available through FEMA. The PA can be further specified as a specific category; the categories relevant to this data are Category A for debris removal and Category B for emergency protective measures.

Since 2006, there have been five Presidential Disaster Declarations for severe winter weather in Missouri, three of these included Cole County (#1673, #1676, and #1736). In all of these disasters, Public Assistance (PA) was made available to Cole County through FEMA.

There have also been two Presidential Emergency Declarations due to severe winter weather for the entire state of Missouri since 2006 (#3281 and #3303). Public Assistance (PA), limited to direct Federal Assistance, was made available during these Emergencies.

The severe winter weather in the first two weeks of December 2007 resulted in both a Presidential Emergency Declaration (#3281) for the ice storm beginning on Dec. 8, 2007 and a Presidential Disaster Declaration (#1736) for the entire 10-day period of severe winter weather. Cole County received a total of \$368,868 in PA funds from the Disaster Declaration. SEMA activated the State Emergency Operations Center and the Governor of Missouri declared a State Emergency which made state resources available to assist local governments.

These storms caused widespread power outages throughout the county; it was estimated that 25% of the county area was without power at one point. The Emergency Management Coordinator reported 22,000 people without power; 11,716 of these were Ameren customers in Jefferson City. Over 1,000 linemen worked to restore power in the Jefferson City area.

The American Red Cross (ARC) and the Salvation Army worked on sheltering needs. Three shelters were opened in the county; one of these reported sheltering 50 people and the ARC shelter in Russellville housed 8 people. In addition, the Salvation Army opened a feeding center in Jefferson City.

| Figure 3.8.1a | | | | | | | | |
|---|--------------|--------|----------|-----------------------------------|--|------------------------------------|---|--|
| Severe Winter Storms in Cole County, Missouri 1994-2009 | | | | | | | | |
| Date | Storm Type | Deaths | Injuries | Estimated Cost (Million \$) | Presidential Disaster or Emergency Declaration # | # of Counties | Assistance in Cole County (IA or PA) | |
| 01/14/94 | Extreme Cold | 0 | 15 | 5 | | 51 plus City of St. Louis | | |
| 04/05/94 | Winter Storm | 0 | 0 | 0.5 | | 31 plus City of St. Louis | | |
| 01/03/95 | Cold | 2 | 6 | 0 | | 29 plus City of St. Louis | | |
| 01/06/95 | Ice Storm | 0 | 0 | 0 | | | | |
| 01/18/95 | Heavy Snow | 0 | 0 | 2.4 | | 22 | | |
| 01/02/96 | Winter Storm | 0 | 0 | 0 | | | | |
| 11/25/96 | Ice Storm | 0 | 0 | 0 | | | | |
| 01/08/97 | Winter Storm | 0 | 0 | 0 | | | | |
| 01/15/97 | Winter Storm | 0 | 0 | 0 | | | | |
| 01/27/97 | Winter Storm | 0 | 0 | 0 | | | | |

| Severe Winter Storms in Cole County, Missistance Residential Resid | Figure 3.8.1b | | | | | | | | |
|--|---|-------------------|--------|----------|-------|---|-------------|-----------------------|--|
| Date Storm Type Deaths Injuries Estimated Cost (Million \$) County (IA or PA) | Severe Winter Storms in Cole County, Missouri 1994-2009 | | | | | | | | |
| 12/08/97 | Date | Storm Type | Deaths | Injuries | Cost | Disaster or Emergency Declaration | | in Cole County (IA | |
| 03/08/98 Winter Storm 0 0 0 0 0 0 0 0 0 | 04/10/97 | Winter Storm | 0 | 0 | 0 | | | | |
| 03/08/98 Winter Storm 0 0 0 0 0 12/21/98 Winter Storm 0 | 12/08/97 | Winter Storm | 0 | 0 | 0 | | | | |
| 12/21/98 | 01/12/98 | Winter Storm | 0 | 0 | 0 | | | | |
| 01/01/99 Winter Storm 0 | 03/08/98 | Winter Storm | 0 | 0 | 0 | | | | |
| 01/27/00 Winter Storm 0 0 0 0 0 0 0 0 0 | 12/21/98 | Winter Storm | 0 | 0 | 0 | | | | |
| 12/13/00 | 01/01/99 | Winter Storm | 0 | 0 | 0 | | | | |
| 12/16/00 Extreme Windchill 0 | 01/27/00 | Winter Storm | 0 | 0 | 0 | | | | |
| 02/25/02 Winter Storm 0 | 12/13/00 | Heavy Snow | 0 | 0 | 0 | | | | |
| 03/02/02 Winter Storm 0 0 0 0 0 12/04/02 Winter Storm 0 0 0 0 0 0 12/24/02 Winter Storm 0 0 0 0 0 0 0 0 0 | 12/16/00 | Extreme Windchill | 0 | 0 | 0 | | | | |
| 12/04/02 Winter Storm 0 0 0 0 0 0 0 0 0 | 02/25/02 | Winter Storm | 0 | 0 | 0 | | | | |
| 12/24/02 Winter Storm 0 | 03/02/02 | Winter Storm | 0 | 0 | 0 | | | | |
| 02/23/03 Winter Storm 0 0 0 0 0 12/09/03 Winter Storm 0 | 12/04/02 | Winter Storm | 0 | 0 | 0 | | | | |
| 12/09/03 | 12/24/02 | Winter Storm | 0 | 0 | 0 | | | | |
| 12/13/03 Winter Storm 0 | 02/23/03 | Winter Storm | 0 | 0 | 0 | | | | |
| 01/25/04 Winter Storm 0 0 0 0 0 11/24/04 Winter Storm 0 0 0 0 28 plus City of St. Louis 12/01/06 Winter Storm 2 0 0 23 1673 13 plus City of St. Louis PA 13 plus City of St. Louis PA 15/01/20 PA 1676 1676 1676 PA 1676 PA 1676 1676 PA 1676 PA 1676 1676 PA 1676 | 12/09/03 | Winter Storm | 0 | 0 | 0 | | | | |
| 11/24/04 Winter Storm 0 0 0 28 plus City of St. Louis 12/08/05 Winter Storm 2 0 0 23 1673 213 plus City of St. Louis 12/01/06 Winter Storm 0 0 65 1676 21673 PA (A,B) 01/12/07 Ice Storm 0 0 65 1676 21676 PA (A,B) 12/6/07 - 12/15/07 Severe Winter Storm 4 NA 34.8 1736 42 PA 12/08/07 Ice Storm 0 0 NA 3281 entire state PA (A,B) 02/11/08 Winter Weather 0 0 0 0 0 01/26/09 Winter Storm NA NA NA 3303 entire state PA (B) | 12/13/03 | Winter Storm | 0 | 0 | 0 | | | | |
| 12/08/05 Winter Storm 2 0 0 28 plus City of St. Louis 12/01/06 Winter Storm 0 0 23 1673 13 plus City of St. Louis 01/12/07 Ice Storm 0 0 65 1676 38 plus City of St. Louis 12/6/07 - 12/15/07 Severe Winter Storm 4 NA 34.8 1736 42 PA 12/08/07 Ice Storm 0 0 NA 3281 entire state PA (A,B) 02/11/08 Winter Weather 0 0 0 0 0 01/26/09 Winter Storm NA NA NA 3303 entire state PA (B) | 01/25/04 | Winter Storm | 0 | 0 | 0 | | | | |
| 12/08/05 Winter Storm 2 0 0 City of St. Louis 12/01/06 Winter Storm 0 0 23 1673 13 plus City of St. Louis 01/12/07 Ice Storm 0 0 65 1676 St. Louis PA (A,B) 12/6/07 - 12/15/07 Severe Winter Storm 4 NA 34.8 1736 42 PA 12/08/07 Ice Storm 0 0 NA 3281 entire state PA (A,B) 02/11/08 Winter Weather 0 0 0 0 0 01/26/09 Winter Storm NA NA NA 3303 entire state PA (B) | 11/24/04 | Winter Storm | 0 | 0 | 0 | | | | |
| 12/01/06 Winter Storm 0 0 23 1673 City of St. Louis PA 01/12/07 Ice Storm 0 0 65 1676 City of St. Louis PA (A,B) 12/6/07 - 12/15/07 Severe Winter Storm 4 NA 34.8 1736 42 PA 12/08/07 Ice Storm 0 0 NA 3281 entire state PA (A,B) 02/11/08 Winter Weather 0 0 0 0 0 01/26/09 Winter Storm NA NA NA 3303 entire state PA (B) | 12/08/05 | Winter Storm | 2 | 0 | 0 | | City of St. | | |
| 01/12/07 Ice Storm 0 0 65 1676 City of St. Louis PA (A,B) 12/6/07 - 12/15/07 Severe Winter Storm 4 NA 34.8 1736 42 PA 12/08/07 Ice Storm 0 0 NA 3281 entire state PA (A,B) 02/11/08 Winter Weather 0 0 0 0 02/23/08 Winter Weather 0 0 0 entire state PA (B) 01/26/09 Winter Storm NA NA NA 3303 entire state PA (B) | 12/01/06 | Winter Storm | 0 | 0 | 23 | 1673 | City of St. | PA | |
| 12/15/07 Storm 4 NA 34.8 1736 42 PA 12/08/07 Ice Storm 0 0 NA 3281 entire state PA (A,B) 02/11/08 Winter Weather 0 0 0 0 02/23/08 Winter Weather 0 0 0 entire state PA (B) 01/26/09 Winter Storm NA NA NA 3303 entire state PA (B) | 01/12/07 | Ice Storm | 0 | 0 | 65 | 1676 | City of St. | PA (A,B) | |
| 12/08/07 Ice Storm 0 0 NA 3281 state PA (A,B) 02/11/08 Winter Weather 0 < | | | 4 | NA | 34.8 | 1736 | 42 | PA | |
| 02/23/08 Winter Weather 0 0 0 01/26/09 Winter Storm NA NA NA 3303 entire state PA (B) | 12/08/07 | Ice Storm | 0 | 0 | NA | 3281 | | PA (A,B) | |
| 01/26/09 Winter Storm NA NA NA 3303 entire state PA (B) | 02/11/08 | Winter Weather | 0 | 0 | 0 | | | | |
| 01/26/09 Winter Storm NA NA NA 3303 state PA (B) | 02/23/08 | Winter Weather | 0 | 0 | 0 | | | | |
| TOTAL 8 21 130.7 | 01/26/09 | Winter Storm | NA | NA | NA | 3303 | | PA (B) | |
| | TOTAL | | | 21 | 130.7 | | | | |

 $Sources: http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent\simstorms; http://www.fema.gov/news/disasters.fema; http://sema.dps.mo.gov/SitReps/Situation%20Reports.htm$

Measure of Probability and Severity

Probability: Moderate Severity: Moderate

Existing Mitigation Activities

Utility Companies

Utility companies in Cole County have policies regarding tree trimming and brush removal around power lines. Consistent maintenance of trees and brush around utility lines limits the possibility of power outages during a severe winter storm. Maintenance also makes financial sense because repairing fallen utility lines and poles is costly and dangerous.

National Weather Service and Local Media

The St. Louis Office of the National Weather Service coordinates with local jurisdictions and media outlets to disperse information regarding severe winter storm watches and warnings. Early warning allows the public to prepare for a severe storm. Should a storm reach catastrophic proportions and officials need to communicate directly with the public, the Emergency Alert System exists to spread that information.

The National Weather Service sets up winter weather warnings in stages of severity. These stages are shown in Figure 3.8.2.

| Figure 3.8.2 | | | | | | | |
|----------------------------|--|--|--|--|--|--|--|
| National ¹ | National Weather Service Winter Warnings | | | | | | |
| 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 lifethreatening. The greatest hazard is often 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 in your area. | | | | | | |
| Blizzard Warning | Snow and strong winds will combine to produce a blinding snow (near zero visibility), deep drifts, and life-threatening wind chill. Seek refuge immediately. | | | | | | |
| Frost/Freeze Warning | Below freezing temperatures are expected and may cause significant damage to plants, crops, or fruit trees. In areas unaccustomed to freezing temperatures, people who have homes without heat need to take added precautions. | | | | | | |

Severe Winter Weather Vulnerability

Jurisdictions: All Jurisdictions

Overview

Cole County rarely suffers from heavy damage due to severe winter storms and therefore most winter storms impact the community only temporarily. At times, a severe winter storm will leave a long lasting mark by inflicting heavy financial damage on the area but storms of this magnitude are rare.

Potential Impact on Existing Structures

A series of small winter storms can impact several jurisdictions. This increases the financial burden on communities and can have a more far reaching economic impact. The following are impacts that may result from severe winter storms:

- Life and Property Many deaths from winter storms are a result of traffic accidents caused by a combination of poor driving surfaces and driving too fast for the conditions. Accidents during winter storms can be particularly devastating because multiple cars are often involved. There are also specific sections of the community, such as the elderly, that are more vulnerable to the complications caused by Severe Winter Weather. Elderly are the most susceptible to complications from excessive and/or prolonged cold or heat. According to the US Census Bureau website the estimated 2008 elderly population for Cole County stands at 8,712. The World Health Organization defines "elderly" as those over the age of 65.
- Roads and Bridges Roads and bridges serve as vital arteries for all residents. Winter storms often limit the effectiveness of the arteries by making driving conditions difficult and unsafe. Emergency vehicles also have trouble operating in these conditions that slow down response times thus limiting their effectiveness in an emergency.
- **Power Lines** Ice storms often adversely impact consistent power supplies. The ice can build up on the wires causing them to fall or the ice can lead to falling tree limbs which then knock down power lines. When this happens power outages occur that can be dangerous. For example, if the population relies on electricity for heat and the electricity does not work for a long time, people run the risk of hypothermia. This is a particular concern for more vulnerable populations such as the elderly.
- Water Lines- Winter storms and their associated cold weather lead to the ground freezing and thawing. As the ground freezes and thaws, pipes in the ground shift and sometimes break causing a lack of potable water. Also, when a pipe breaks, damage to property can be extensive and expensive.

Currently, there is not a reliable or accurate way to estimate costs associated with winter storms. Too many variables exist to accurately portray how much damage would be incurred by a winter

storm. For instance, the cost of a storm that dropped 20 inches of snow would be different than an ice storm which causes different types of damage and challenges to infrastructure. Locations of heavier snow accumulation, time of day, and other characteristics would all play a role in determining the cost of a winter storm. Figure 3.8.3 is a very rough estimate of damage that could occur.

Figure 3.8.3 Estimated exposed structures

| Impact Assessment Severe Winter Weather | | | | | | | | | |
|---|---|------------|------------|--------------|-----------|--------------|-------------|--|--|
| | Medium Vulnerability = 5 - 10% of buildings impacted Maximum Calculated Impact (10%) | | | | | | | | |
| | | Maximum | Building | | 70, | | | | |
| Jurisdiction | Residential | Commercial | Industrial | Agricultural | Religious | Governmental | Educational | | |
| Planning Area | 2544 | 148 | 36 | 16 | 19 | 112 | 5 | | |
| Cole County (unincorporated areas) | 903 | 36 | 14 | 11 | 2 | 2 | 2 | | |
| Jefferson City | 1378 | 102 | 19 | 4 | 15 | 110 | 3 | | |
| Lohman | 83 | 1 | 0 | 0 | 0 | 0 | 0 | | |
| Russellville | 42 | 2 | 0 | 0 | 0 | 0 | 0 | | |
| St. Martins | 42 | 2 | 1 | 0 | 0 | 0 | 0 | | |
| St. Thomas | 13 | 1 | 0 | 0 | 0 | 0 | 0 | | |
| Taos | 32 | 1 | 1 | 0 | 0 | 0 | 0 | | |
| Wardsville | 36 | 2 | 1 | 1 | 0 | 0 | 0 | | |
| HAZUS MH | HAZUS MH | | | | | | | | |

Potential Impact on Future Development

Potential impacts of this hazard on future development are not quantifiable with the resources available.

3.9 Wildfire

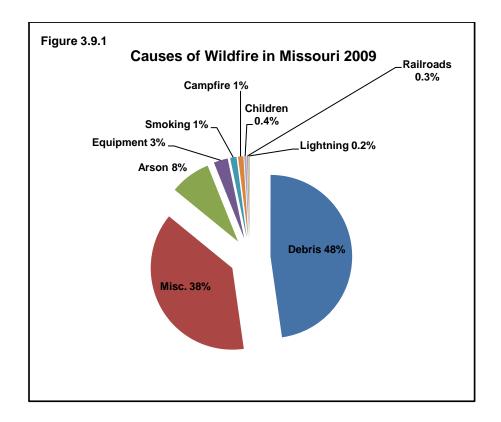
Description of Hazard

Wildfire is defined as an uncontrolled fire that destroys forests and many other types of vegetation, as well as animal species. Forest, grassland, and natural cover fires can and have occurred at any time throughout the year in Missouri. In Cole County, the majority of the fires and the greatest acreage loss occur during the spring fire season (February 15 - May 10).

Spring is the time of the year when rural residents burn garden spots and brush piles. Many landowners also believe it is necessary to burn the woods in the spring to grow more grass, kill ticks, and get rid of brush. These factors, combined with low humidity and high winds, result in higher fire danger at this time of year. The spring fire season abates with the growth of the new season's grasses and other green vegetation.

Numerous fires also occur in October and November due to the dryness associated with fall in Missouri. Many rural residents use this time of year to burn leaves and debris thus raising the possibility of a fire which burns out of control.

The major causes of wildfires in Missouri are various human activities, according to statistics from the Missouri Department of Conservation (see Figure 3.9.1). Debris burning is consistently the number one cause of wildfires in Missouri. Fires caused by lightning are rare despite 50 to 70 thunderstorm days per year.



Geographic Location

While the Planning Area as a whole is at some risk for wildfire, the unincorporated areas of Cole County (including Cole R-V School District) and the Wildland Urban Interfaces of Jefferson City (including Jefferson City Public School District and Lincoln University), St. Martins, and St. Thomas are at greater risk.

The Wildland Urban Interface (WUI) was defined as "the area where structures and other human development meet or intermingle with undeveloped wildland" in a 2001 Federal Register report. There is a higher risk scenario for wildfire in these areas where high fuel loads and structures meet or overlap.

Data provided by the University of Wisconsin-Madison outlines the WUI and has been used to map the WUI for the Planning Area (see Figure 3.9.2). The specific interface definitions used are:

• Interface Community

Structures directly abut wildland fuels. There is a clear line of demarcation between wildland fuels and residential, business, and public structures. Wildland fuels do not generally continue into the developed area. The development density for an interface community is usually three or more structures per acre, with shared municipal services.

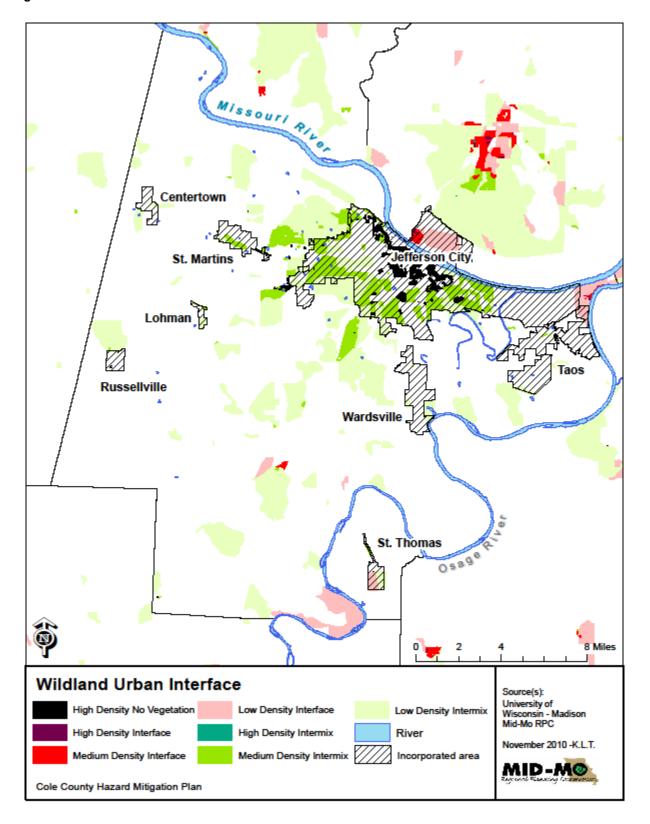
• Intermix Community

Structures are scattered throughout a wildland area. There is no clear line of demarcation; wildland fuels are continuous outside of and within the developed area. The development density in the intermix ranges from structures very close together to one structure per 40 acres.

• Occluded Community

Often found within a city, structures abut an island of wildland fuels (e.g. park or open space). There is a clear line of demarcation between structures and wildland fuels. The development density is usually similar to those found in the interface community, but the occluded area is usually less than 1,000 acres in size.

Figure 3.9.2



Previous Occurrences

Large and widespread wildfires, such as occur in the western United States, have not been a problem in the Planning Area in recent history. Most fires in the Planning Area are brush fires which are usually dealt with in less than a few hours.

Measure of Probability and Severity

Probability: Moderate (unincorporated Cole County, Jefferson City, St. Martins, St. Thomas,

Cole R-V Public School District, Jefferson City Public School District,

Lincoln University)

Low (Lohman, Russellville, Taos, Wardsville)

Severity: Moderate (unincorporated Cole County, Jefferson City, St. Martins, St. Thomas,

Cole R-V Public School District, Jefferson City Public School District,

Lincoln University)

Low (Lohman, Russellville, Taos, Wardsville)

The Missouri State Hazard Mitigation Plan (2010) points out that the probability of wildfires may increase to high during conditions of excessive heat, dryness, and drought. The probability is also higher in spring and late fall

Existing Mitigation Activities

Emergency response systems, well trained fire departments, and numerous county roads which function as fire roads all improve response times to fire events, thus decreasing the chances of fire spread.

The Missouri Department of Conservation and the State Fire Marshal have published an informational booklet entitled "Living with Wildfire" which educates homeowners on assessing a property's vulnerability to wildfire and making changes to decrease the risk. The publication is available online at: http://mdc4.mdc.mo.gov/Documents/322.pdf

A Firewise Communities program has been implemented in Missouri to teach people how to minimize the threat of wildfire.

Wildfire Vulnerability

Jurisdictions: Planning Area; at greater risk - Cole County (unincorporated areas), Jefferson City, St. Martins, St. Thomas, Cole R-V School District, Jefferson City Public School District, Lincoln University

Overview

Wildfire in Missouri most commonly stems from human activities such as burning garden plots, trash, and brush. According to the Missouri Department of Conservation, 48% of all wildfires in Missouri result from debris burning that gets out of hand. Because these activities occur more frequently in rural areas, unincorporated areas of Cole County are at greater risk and vary in vulnerability from the incorporated areas. According to statistics from the Missouri Department of Conservation rural areas of Cole County and the rural/urban interfaces are most at risk from wildfires. Wildfires in Cole County tend to be limited in their spatial extent thus minimizing their impact.

The jurisdictions of Jefferson City (including Jefferson City Public School District and Lincoln University), St. Martins, and St. Thomas are placed in a higher risk category due to the Wildland Urban Interface (WUI) in those communities. The mapped WUI for Jefferson City, St. Martins, and St. Thomas are shown in Figures 3.9.3- 3.9.5.

Potential Impact on Existing Structures

Currently, there is not a reliable or accurate way to estimate costs associated with a wildfire event. Too many variables exist to accurately portray how much damage would be incurred by a wildfire. For example, the cost of a wildfire that strikes structures versus cropland versus forestland would all be different. Location of the fire, time of day, and other characteristics would all play a role in determining the cost of a wildfire. Fire suppression methods also vary depending on existence of structures. Some wildfires are allowed to burn themselves out which means minimal cost for suppression.

Potential Impact on Future Development

Potential impacts of this hazard on future development are not quantifiable with the resources available.

Figure 3.93

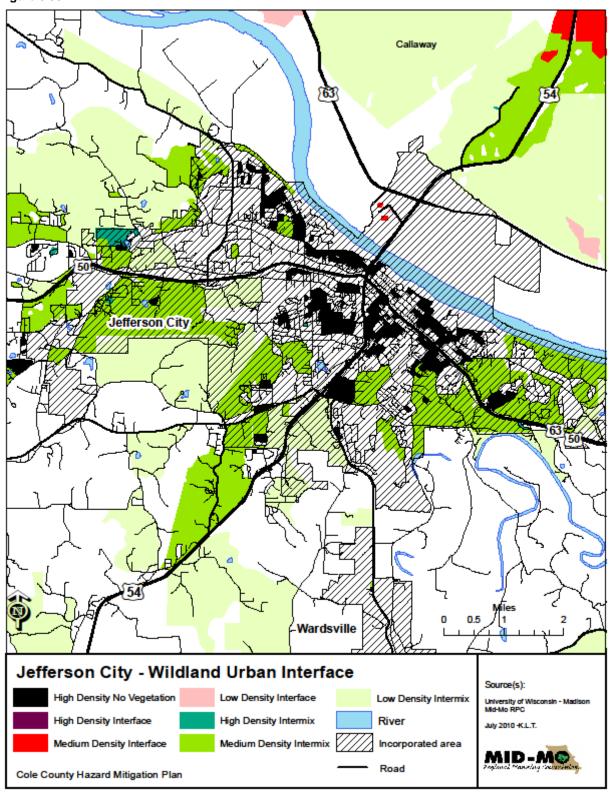


Figure 3.9.4

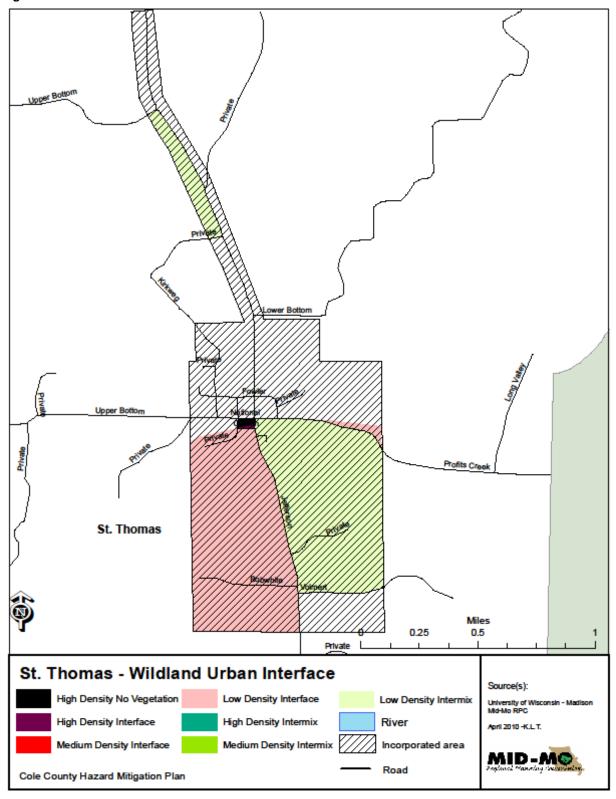
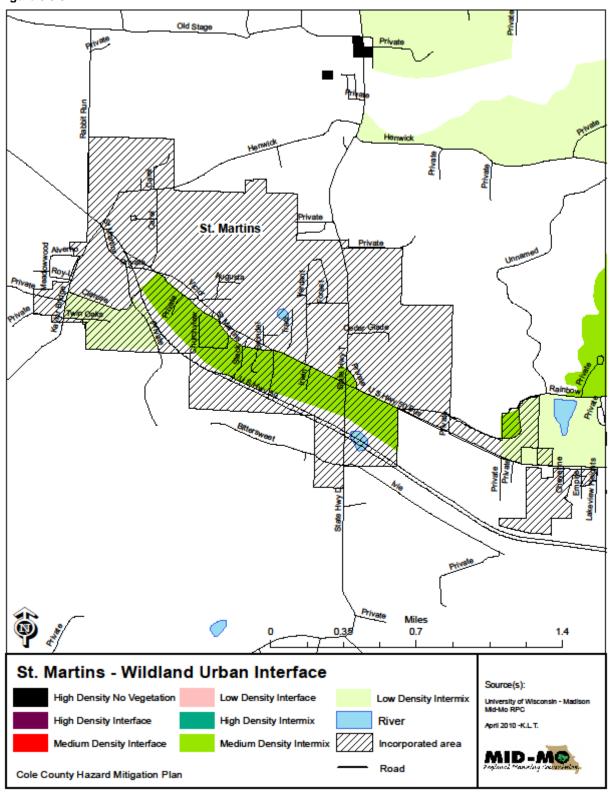


Figure 3.9.5



3.10 Windstorm, Tornado, and Hailstorm

Windstorm, tornado, and hailstorm are hazards with potential to cause great damage. They will each be profiled separately but grouped together in this section of the plan as these three hazards are closely associated with severe thunderstorms in Missouri. There will be a general discussion of thunderstorms followed by the profiles of the three hazards (windstorm, tornado, and hailstorm.) Lightning is a hazard which FEMA does not require to be profiled for mitigation purposes; therefore, it is not profiled in this plan.

Some Background on Thunderstorm

A thunderstorm is a rainstorm with thunder and lightning present. Warm, humid climates, such as that in mid-Missouri, are favorable for the formation of thunderstorms. The average Missourian is well aware of the potential hazards of the thunderstorm season; these include heavy rains and, potentially, strong winds, tornadoes, hail, and lightning strikes. The effects of heavy rains have been considered in the section on flood (see Section 3.5).

Thunderstorms can range in complexity from single cell storms through multicell cluster storms, multicell line storms (squall lines), and on to supercell storms. A single cell thunderstorm typically lasts 20-30 minutes but when numerous cells are generated, as in a multicell storm, the thunderstorm can last for hours. Supercell storms include rotation and are responsible for the generation of severe tornadoes. The National Weather Service considers a thunderstorm "severe" when it includes one or more of the following: **winds** gusting in excess of 57.5 mph, a **tornado**, or **hail** at least 0.75 inch in diameter.

Cole County is located in a part of the country with a relatively high number of thunderstorms. National Weather Service data indicates that there are on average 50-60 thunderstorm days per year in Missouri (see Figure 3.10.1). Thunderstorms can occur during any season in Missouri but they are more frequent in the spring and summer. Many of these thunderstorms are severe.

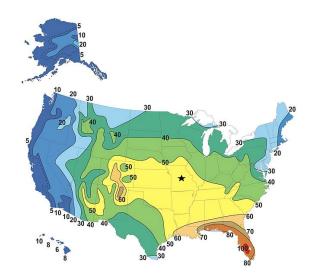


Figure 3.10.1 Average Number of Thunderstorm Days Annually in U.S.

Source: http://www.srh.noaa.gov/jetstream/tstorms/tstorms_intro.htm

Windstorm

Description of Hazard

Severe and damaging winds in the Planning Area are usually, but not always, associated with thunderstorms. Thunderstorm winds can reach speeds up to 100 mph and produce damage paths for hundreds of miles. According to NOAA, property and crop damage from thunderstorm winds is more common, and can be more severe, than damage from tornadoes. Thunderstorm wind damage accounts for half of all the NOAA reports of severe weather events in the lower 48 states.

Thunderstorm winds are often called "straight-line" winds to distinguish them from tornadoes, which have a rotational element. The following are the distinctions made between different thunderstorm winds:

- **Gust front** Gusty winds out ahead of a thunderstorm; characterized by a wind shift and temperature drop.
- **Downbursts** A strong downdraft with a width of greater than 2.5 miles which results in an outward burst of damaging winds near the ground; may possibly produce damage similar to that of a strong tornado.
- **Microbursts** A small concentrated downburst with a width less than 2.5 miles; generally short-lived, lasting only 5-10 minutes, with maximum wind speeds up to 168 mph.

A derecho is a widespread, massive, and violent thunderstorm wind event producing straight-line winds in excess of 70 mph and moving quickly over large areas. While uncommon, events such as a massive derecho, almost the size of the area of the state of Missouri, caused extensive damage in southern Missouri and Illinois in the spring of 2009.

Much of the damage caused by high winds occurs because of falling trees; people, buildings, and vehicles may be damaged by falling trunks and branches. Power lines may be blown or knocked down and people left without electricity. In some cases, roofs are directly blown off buildings and windows are shattered.

Geographic location

The entire Planning Area is at risk from windstorms. Both urban and rural areas can sustain heavy losses from severe winds; the potential damage to houses and urban trees is obvious but crops and forests can also sustain massive and costly damage from windstorms.

Previous occurrences

According to NOAA, there have been 92 windstorm events in Cole County since 1956 (see Figure 3.10.2). Only 4 of these windstorm events were not associated with thunderstorms.

These windstorms resulted in at least \$1.155M in property damage and \$2,000 in crop damage in Cole County. One storm alone caused \$1M property damage in Jefferson City. According to NOAA reports, the thunderstorm winds of August 7, 1999 "caused extensive damage to several businesses in a strip mall on the west side of Jefferson City. A furniture store lost its roof resulting in the loss of almost the entire inventory inside. A large department store sustained partial roof, window and door damage. Six other businesses in the strip mall had windows blown out or damage to doors. Several trees were also blown down across town with some vehicles damaged by the fallen trees."

Property damage in the county from thunderstorm winds since 1950 has undoubtedly been higher than the NOAA data indicates. The thunderstorm winds on April 18, 1995 were responsible for \$700,000 property damage in 23 Missouri counties, including Cole, and the City of St. Louis; some of that recorded damage may have occurred in Cole County.

In addition, SEMA Situation Reports indicate the following about the thunderstorm winds (and hail) which impacted Cole County on May 6, 2003: Power and telephones were down throughout the county; there were some water outages which were addressed by delivery of bottled water; 130-140 homes reported minor to severe damage (mostly in the Osage Bend area), and one road was closed. These winds and hail were part of a larger storm system which spawned tornadoes further south in Missouri. A Presidential Disaster (#1463) was declared for this storm; Individual Assistance (IA) was made available to Cole County through this Declaration. The NOAA data, however, does not indicate any property damage from this storm in Cole County.

| Figure 3.10.2 | a | | | | 4.4.60.60 | | | |
|---------------------|----------|--------|----------------------|--------------------|----------------|----------|--------------------|----------------|
| Canaral | | Windst | orm Events in Cole C | | - 11/30/20 |)09 | Branarty | Cron |
| General Location | Date | Time | Туре | Magnitude (mph) | Deaths | Injuries | Property Damage | Crop Damage |
| County | 06/24/56 | 20:00 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 06/11/57 | 1:00 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 06/29/57 | 23:00 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 08/16/57 | 15:00 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 04/05/58 | 16:30 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 04/23/58 | 21:00 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 06/12/58 | 10:57 | Thunderstorm Winds | 75 | 0 | 0 | 0 | 0 |
| County | 10/09/58 | 14:20 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 05/10/59 | 19:32 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 04/22/61 | 4:20 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 08/09/61 | 18:30 | Thunderstorm Winds | 60 | 0 | 0 | 0 | 0 |
| County | 05/26/65 | 13:35 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 05/17/66 | 18:30 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 05/23/66 | 17:00 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 06/22/69 | 16:26 | Thunderstorm Winds | 58 | 0 | 0 | 0 | 0 |
| County | 05/10/70 | 17:45 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 12/15/71 | 2:32 | Thunderstorm Winds | 69 | 0 | 0 | 0 | 0 |
| County | 07/29/73 | 21:30 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 12/04/73 | 6:10 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 06/08/74 | 23:35 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 11/29/75 | 21:10 | Thunderstorm Winds | 61 | 0 | 0 | 0 | 0 |
| County | 03/04/76 | 17:00 | Thunderstorm Winds | 60 | 0 | 0 | 0 | 0 |
| County | 08/23/76 | 16:55 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 08/26/78 | 14:25 | Thunderstorm Winds | 86 | 0 | 0 | 0 | 0 |
| County | 04/11/79 | 11:45 | Thunderstorm Winds | 58 | 0 | 0 | 0 | 0 |
| County | 06/04/80 | 16:50 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 09/16/80 | 16:05 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 05/23/81 | 20:40 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 10/05/81 | 15:51 | Thunderstorm Winds | 58 | 0 | 0 | 0 | 0 |
| County | 03/15/82 | 22:58 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 05/05/82 | 15:30 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 07/15/82 | 15:23 | Thunderstorm Winds | 60 | 0 | 0 | 0 | 0 |
| County | 04/27/83 | 15:44 | Thunderstorm Winds | 71 | 0 | 0 | 0 | 0 |
| County | 06/17/85 | 0:50 | Thunderstorm Winds | 70 | 0 | 0 | 0 | 0 |
| County | 06/21/85 | 21:40 | Thunderstorm Winds | 62 | 0 | 0 | 0 | 0 |
| County | 07/05/87 | 10:20 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 05/08/88 | 14:50 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 10/17/88 | 17:40 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |

| Figure 3.10.2b | | Windst | orm Events in Cole C | ounty 1956 | - 11/30/20 | 009 | | |
|--|----------|--------|----------------------|--------------------|------------|----------|--------------------|----------------|
| General Location | Date | Time | Туре | Magnitude (mph) | Deaths | Injuries | Property Damage | Crop Damage |
| County | 08/27/89 | 18:10 | Thunderstorm Winds | 60 | 0 | 0 | 0 | 0 |
| County | 07/02/92 | 18:55 | Thunderstorm Winds | na | 0 | 0 | 0 | 0 |
| County | 07/10/92 | 18:00 | Thunderstorm Winds | 70 | 0 | 0 | 0 | 0 |
| St. Martins | 04/15/94 | 2:25 | Thunderstorm Winds | na | 0 | 0 | 5K | 0 |
| Jefferson City | 04/15/94 | 2:30 | Thunderstorm Winds | na | 0 | 0 | 5K | 0 |
| Russellville | 04/15/94 | 2:30 | Thunderstorm Winds | na | 0 | 0 | 5K | 0 |
| Taos | 04/15/94 | 2:50 | Thunderstorm Winds | na | 0 | 0 | 50K | 0 |
| Jefferson City | 04/26/94 | 19:17 | Thunderstorm Winds | na | 0 | 0 | 50K | 0 |
| 23 Missouri Counties plus City of St. Louis | 04/18/95 | 8:30 | High Winds | na | 0 | 0 | 700K | 0 |
| Jefferson City | 07/07/95 | 23:55 | Thunderstorm Winds | na | 0 | 0 | 1K | 0 |
| Centertown | 07/08/95 | 16:20 | Thunderstorm Winds | 60 | 0 | 0 | 0 | 0 |
| Jefferson City | 07/08/95 | 16:53 | Thunderstorm Winds | 60 | 0 | 0 | 0 | 0 |
| Jefferson City | 05/23/98 | 15:15 | Thunderstorm Winds | 58 | 0 | 0 | 0 | 0 |
| Wardsville | 05/23/98 | 15:35 | Thunderstorm Winds | 63 | 0 | 0 | 0 | 0 |
| Russellville | 06/18/98 | 17:46 | Thunderstorm Winds | 63 | 0 | 0 | 0 | 0 |
| Jefferson City | 06/18/98 | 17:55 | Thunderstorm Winds | 63 | 0 | 0 | 0 | 0 |
| Wardsville | 06/18/98 | 17:55 | Thunderstorm Winds | 63 | 0 | 0 | 0 | 0 |
| Jefferson City | 11/10/98 | 2:05 | Thunderstorm Winds | 60 | 0 | 0 | 0 | 0 |
| Wardsville | 11/10/98 | 2:05 | Thunderstorm Winds | 60 | 0 | 0 | 0 | 0 |
| Jefferson City | 08/07/99 | 23:05 | Thunderstorm Winds | 81 | 0 | 0 | 1.0M | 0 |
| Centertown | 04/20/00 | 2:45 | Thunderstorm Winds | 63 | 0 | 0 | 0 | 0 |
| Jefferson City | 06/04/00 | 18:20 | Thunderstorm Winds | 60 | 0 | 0 | 0 | 0 |
| Jefferson City | 06/20/00 | 19:20 | Thunderstorm Winds | 60 | 0 | 0 | 0 | 0 |
| Centertown | 07/02/00 | 16:27 | Thunderstorm Winds | 60 | 0 | 0 | 0 | 0 |
| County | 02/25/01 | 0:00 | High Wind | 46 | 0 | 0 | 0 | 0 |
| Cole County | 03/13/01 | 9:00 | High Wind | 52 | 0 | 0 | 0 | 0 |
| Russellville | 04/19/02 | 16:54 | Thunderstorm Winds | 59 | 0 | 0 | 0 | 0 |
| Jefferson City | 07/10/02 | 12:35 | Thunderstorm Winds | 69 | 0 | 0 | 0 | 0 |
| Brazito | 07/10/02 | 12:40 | Thunderstorm Winds | 69 | 0 | 0 | 40K | 0 |
| Wardsville | 07/10/02 | 12:45 | Thunderstorm Winds | 63 | 0 | 0 | 0 | 0 |
| Russellville | 07/10/02 | 12:55 | Thunderstorm Winds | 75 | 0 | 0 | 0 | 0 |
| Jefferson City | 07/22/02 | 17:16 | Thunderstorm Winds | 60 | 0 | 0 | 0 | 0 |
| Jefferson City | 03/12/03 | 23:28 | Thunderstorm Winds | 69 | 0 | 0 | 0 | 0 |
| Centertown | 03/13/03 | 0:50 | Thunderstorm Winds | 69 | 0 | 0 | 0 | 0 |

| Figure 3.10.2c | | Wind | dstorm Events in Cole Co | untv 1956 - 11 | /30/2009 | | | |
|------------------------|---------------|-------------|---------------------------|--------------------|----------|----------|--------------------|----------------|
| General Location | Date | Time | Туре | Magnitude (mph) | Deaths | Injuries | Property Damage | Crop Damage |
| Brazito | 05/06/03 | 15:45 | Thunderstorm Winds | 63 | 0 | 0 | 0 | 0 |
| Hickory Hill | 05/06/03 | 15:55 | Thunderstorm Winds | 64 | 0 | 0 | 0 | 0 |
| Eugene | 05/06/03 | 16:10 | Thunderstorm Winds | 64 | 0 | 0 | 0 | 0 |
| Jefferson City | 05/10/03 | 19:40 | Thunderstorm Winds | 66 | 0 | 0 | 0 | 0 |
| Jefferson City | 08/20/03 | 17:45 | Thunderstorm Winds | 69 | 0 | 0 | 0 | 0 |
| Jefferson City | 11/23/03 | 17:20 | Thunderstorm Winds | 58 | 0 | 0 | 0 | 0 |
| Jefferson City | 07/05/04 | 6:55 | Thunderstorm Winds | 63 | 0 | 0 | 0 | 0 |
| Russellville | 08/25/04 | 14:15 | Thunderstorm Winds | 58 | 0 | 0 | 0 | 0 |
| Jefferson City | 08/25/04 | 15:00 | Thunderstorm Winds | 63 | 0 | 0 | 0 | 0 |
| Jefferson City | 03/07/05 | 1:34 | Thunderstorm Winds | 58 | 0 | 0 | 0 | 0 |
| Jefferson City | 06/10/05 | 13:00 | Thunderstorm Winds | 63 | 0 | 0 | 0 | 0 |
| Jefferson City | 08/13/05 | 16:00 | Thunderstorm Winds | 63 | 0 | 0 | 0 | 0 |
| Jefferson City | 09/13/05 | 20:32 | Thunderstorm Winds | 63 | 0 | 0 | 0 | 0 |
| Jefferson City | 09/19/05 | 17:45 | Thunderstorm Winds | 63 | 0 | 0 | 0 | 0 |
| Jefferson City | 11/05/05 | 19:00 | Thunderstorm Winds | 64 | 0 | 0 | 0 | 0 |
| Jefferson City | 03/30/06 | 22:35 | Thunderstorm Winds | 60 | 0 | 0 | 0 | 0 |
| Jefferson City | 06/18/07 | 17:00 | Thunderstorm Wind | 60 | 0 | 0 | 0 | 0 |
| Jefferson City | 08/12/07 | 22:30 | Thunderstorm Wind | 60 | 0 | 0 | 0 | 0 |
| 6 Missouri Counties | 05/11/08 | 0:00 | Strong Wind | 55 | 0 | 0 | 0 | 2K |
| Russellville | 03/08/09 | 7:49 | Thunderstorm Wind | 60 | 0 | 0 | 0 | 0 |
| TOTALS: | | | | | 0 | 0 | 1.855M | 2K |
| Source: http://ww | w4.ncdc.noaa. | aov/cai-win | /wwcgi.dll?wwevent~storms | | | | | |

Measures of Probability and Severity

Probability: High

Severity: Moderate to High

Existing mitigation strategies

Warning Systems

The following warning systems are used in the Planning Area:

Local television weather reports

Local radio weather reports

9-1-1 call center and Public Emergency Broadcast Center

Tornado sirens

Windstorm Vulnerability

Jurisdictions: All Jurisdictions

Overview

All jurisdictions in Cole County are vulnerable to the effects of Windstorms. All above ground structures are vulnerable to the effects of a Windstorm and all other hazards associated with them (hail, rain, flooding, flying debris, etc.) Much of the damage caused by high winds occurs because of falling trees; people, buildings, and vehicles may be damaged by falling trunks and branches. Critical infrastructure such as communication lines, power lines, and cell towers may be blown down. Flying debris causes damage to people, homes, and businesses.

Potential Impact on Existing Structures

While past impacts have been minimal, future disasters can cause extensive damage. There is a wide range of impact possible. Non-permanent and wood framed structures are very vulnerable to destruction from high winds. While high winds are the force behind damage, it is the windblown debris that causes the most damage.

Figure 3.10.3 Estimated exposed structures

| Impact Assessment Tornado and Thunderstorm | | | | | | | | | | |
|--|--|------------|------------|--------------|-----------|--------------|-------------|--|--|--|
| | High Vulnerability = 10 - 100% of buildings impacted | | | | | | | | | |
| | | Maximu | ım Calcula | ted Impact | (100%) | | | | | |
| | | | Buildir | ng Type | | | | | | |
| Jurisdiction | Residential | Commercial | Industrial | Agricultural | Religious | Governmental | Educational | | | |
| Planning Area | 25436 | 1479 | 355 | 162 | 186 | 1120 | 46 | | | |
| Cole County (unincorporated areas) | 9774 | 363 | 135 | 104 | 30 | 14 | 8 | | | |
| Jefferson City | 13782 | 1023 | 190 | 43 | 147 | 1095 | 32 | | | |
| Lohman | 83 | 9 | 1 | 1 | 2 | 1 | 0 | | | |
| Russellville | 419 | 17 | 2 | 3 | 2 | 2 | 2 | | | |
| St. Martins | 418 | 20 | 11 | 3 | 2 | 0 | 1 | | | |
| St. Thomas | 128 | 6 | 2 | 3 | 1 | 1 | 1 | | | |
| Taos | 324 | 12 | 6 | 0 | 1 | 2 | 1 | | | |
| Wardsville | 357 | 20 | 7 | 5 | 1 | 3 | 1 | | | |
| HAZUS MH | | | | | | | | | | |

Potential Impact on Future Development

Because of the random nature of this hazard, potential impacts of this hazard on future development are not quantifiable with the resources available.

Tornado

Description of Hazard

A tornado is a violently rotating column of air which is usually generated by a supercell thunderstorm. The potential destruction posed by a tornado touching ground is well known.

Tornadoes occur most frequently in late afternoon and early evening, but can occur at any time. Tornadoes can move in any direction, but often move from southwest to northeast. The seasonal, temporal, and spatial uncertainties surrounding thunderstorms and tornadoes make widespread and year round preparedness essential. In addition, tornadoes may appear nearly transparent until dust and debris are picked up or a cloud forms within the funnel.

The destructive effects of a tornado depend on the strength of the winds, proximity to people and structures, the strength of structures, and/or how well a person is sheltered. The average forward speed of a tornado is about 30 mph, but may vary from nearly stationary to 70 mph. Tornadoes are classified by the Fujita scale, which ranks tornadoes according to wind speed and damage caused (see Figure 3.10.4).

| Figure 3.10 | 0.4 | | |
|-------------------|--------------------------|------------------------|--|
| | | | The Fujita Scale |
| F-Scale Number | Intensity Phrase | Wind Speed (mph) | Type of Damage Done |
| F0 | Gale tornado | 40-72 | Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards. |
| F1 | Moderate tornado | 73-112 | The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed. |
| F2 | Significant tornado | 113-157 | Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated. |
| F3 | Severe tornado | 158-206 | Roof and some walls torn off well constructed houses; trains overturned; most trees in forest uprooted |
| F4 | Devastating tornado | 207-260 | Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated. |
| F5 | Incredible tornado | 261-318 | Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel reinforced concrete structures badly damaged. |
| F6 | Inconceivable tornado | 319-379 | These winds are very unlikely. The small area of damage they might produce would probably not be recognizable along with the mess produced by F4 and F5 wind that would surround the F6 winds. Missiles, such as cars and refrigerators would do serious secondary damage that could not be directly identified as F6 damage. If this level is ever achieved, evidence for it might only be found in some manner of ground swirl pattern, for it may never be identifiable through engineering studies |

Tornadoes tend to dissipate as fast as they form. Unlike a hurricane, which can last for multiple hours, tornadoes are often in one place for no more than a few minutes.

Technological advances such as Doppler radar, computer modeling, and Emergency Warning Systems, have increased the amount of time the general public has to respond to a tornado. Despite these advances, tornadoes can still strike an area with little warning. Often people have no more than a few minutes to get to safety. Being able to quickly get to a safe place is absolutely imperative in order to prevent loss of life.

Geographic Location

The entire Planning Area is at risk from tornadoes.

While tornadoes can strike anywhere, there is a greater chance of loss of life and destruction of property in population centers. This is especially true of a tornado with a large path.

Previous Occurrences

Cole County has experienced eight (8) tornadoes between 1966 and 2009, as officially recorded by NOAA (see Figure 3.10.5). There have not been any injuries or deaths recorded in association with these tornadoes but they did result in \$2.8 million in property damage. Two F2 ("significant tornado") tornadoes are included in these statistics.

| Figure 3.10.5 | | | Figure 3.10.5 | | | | | | | |
|----------------------------|---|--------------|---------------------------------|--------|----------|--------------------|----------------|--|--|--|
| | Tornado Events in Cole County 1966 - 11/30/2009 | | | | | | | | | |
| General Location | Date | Time | Magnitude (Fujita rating) | Deaths | Injuries | Property Damage | Crop Damage | | | |
| County | 10/14/66 | 17:30 | F1 | 0 | 0 | 25K | 0 | | | |
| County | 05/12/80 | 17:41 | F2 | 0 | 0 | 25K | 0 | | | |
| County | 04/02/82 | 18:45 | F0 | 0 | 0 | 0 | 0 | | | |
| County | 05/01/83 | 13:25 | F1 | 0 | 0 | 250K | 0 | | | |
| County | 05/01/83 | 13:38 | F0 | 0 | 0 | 0 | 0 | | | |
| County | 03/15/84 | 16:43 | F0 | 0 | 0 | 0 | 0 | | | |
| County | 10/03/86 | 2:32 | F2 | 0 | 0 | 2.5M | 0 | | | |
| Eugene/ Wardsville area | 04/08/99 | 17:30 | F1 | 0 | 0 | 0 | 0 | | | |
| TOTALS : 0 0 2.8M 0 | | | | | | | 0 | | | |
| Source: http://www4.nd | cdc.noaa.gov/c | cgi-win/wwcg | gi.dll?wwevent~s | torms | | | | | | |

Measure of Probability and Severity

Probability: High Severity: High

Existing Mitigation Strategies

Warning Systems

The following warning systems are used in the Planning Area: Local television weather reports Local radio weather reports 9-1-1 call center and Public Emergency Broadcast Center Tornado sirens

Tornado Vulnerability

Jurisdictions: All Jurisdictions

Overview

All jurisdictions in Cole County are vulnerable to the effects of a Tornado. All above ground structures are vulnerable to the effects of a Tornado and all other hazards associated with them (hail, rain, flooding, flying debris, etc.)

Approximately 800 tornadoes are reported in the United States each year, causing an average of 80 fatalities and 1,500 injuries, according to data from NOAA,

Cole County has been hit by eight tornadoes since 1966 with no reported deaths or injuries. That is not to say that the prevention of just one loss of life shouldn't be a high priority. When compared to other major tornado disasters experienced by other parts of the country the financial impact has been minimal at \$2.8 million since 1966.

Potential Impact on Existing Structures

While past impacts have been minimal, future disasters can cause extensive damage. There is a wide range of impact possible from a tornado and wind speeds affect all structure types differently. Non-permanent and wood framed structures are very vulnerable to destruction from high winds. While high winds are the force behind damage, it is the windblown debris from a tornado that causes the most damage and deaths.

Figure 3.10.6 Estimated exposed structures

| Impact Assessment Tornado and Thunderstorm | | | | | | | | | | |
|--|--|------------|------------|--------------|-----------|--------------|-------------|--|--|--|
| | High Vulnerability = 10 - 100% of buildings impacted | | | | | | | | | |
| | | Maximu | ım Calcula | ted Impact | (100%) | | | | | |
| | | | Buildir | ng Type | | | | | | |
| Jurisdiction | Residential | Commercial | Industrial | Agricultural | Religious | Governmental | Educational | | | |
| Planning Area | 25436 | 1479 | 355 | 162 | 186 | 1120 | 46 | | | |
| Cole County (unincorporated areas) | 9774 | 363 | 135 | 104 | 30 | 14 | 8 | | | |
| Jefferson City | 13782 | 1023 | 190 | 43 | 147 | 1095 | 32 | | | |
| Lohman | 83 | 9 | 1 | 1 | 2 | 1 | 0 | | | |
| Russellville | 419 | 17 | 2 | 3 | 2 | 2 | 2 | | | |
| St. Martins | 418 | 20 | 11 | 3 | 2 | 0 | 1 | | | |
| St. Thomas | 128 | 6 | 2 | 3 | 1 | 1 | 1 | | | |
| Taos | 324 | 12 | 6 | 0 | 1 | 2 | 1 | | | |
| Wardsville | 357 | 20 | 7 | 5 | 1 | 3 | 1 | | | |
| HAZUS MH | | | | | | | | | | |

Potential Impact on Future Development

Because of the random nature of this hazard, potential impacts of this hazard on future development are not quantifiable with the resources available.

Hailstorm

Description of Hazard

Hail is formed when updrafts in thunderstorms carry raindrops up to very high and cold areas where they freeze into ice. Hail, especially large sized hail, can cause severe damage and presents a threat to automobiles, airplanes, roofs, crops, livestock, and even humans.

Geographic Location

The entire Planning Area is at risk from hailstorm.

While hail can strike anywhere, population centers are more at risk for injury and/or property damage from hail.

Previous Occurrences

NOAA lists 83 separate reports of hail (of at least 0.75 inch in diameter) in Cole County since 1958 (see Figure 3.10.7). These reports were associated with 52 separate storm systems. There were reports of 2 inch diameter hail with a storm system in 2003 and numerous storms which spawned hail of 1.5 inches diameter or larger.

While the NOAA data does not indicate damage from any of these hailstorm events, common knowledge would indicate that this is not accurate. There was a huge storm in the spring of 2006 which caused massive hail damage across the mid-Missouri region. Information from neighboring Boone County indicates that there was over \$1 million in hail damage incurred by that county's buildings for the year 2006. Many private homes throughout the region received new roofs because of hailstorm damage that year.

While hailstorms of the magnitude that caused such damage in 2006 do not occur every year in Cole County, hail is a costly hazard for the Planning Area.

| Figure 3.10.7a | | | | | | | |
|---------------------|-----------|--------|-------------------------|----------|-------------|--------------------|----------------|
| | Hailstorm | Events | s in Cole Co | unty 195 | 8 - 11/30/2 | | |
| General Location | Date | Time | Magnitude (diameter) | Deaths | Injuries | Property Damage | Crop Damage |
| County | 04/05/58 | 11:40 | 1.00 in. | 0 | 0 | 0 | 0 |
| County | 04/23/58 | 21:00 | 1.50 in. | 0 | 0 | 0 | 0 |
| County | 04/19/63 | 2:00 | 1.00 in. | 0 | 0 | 0 | 0 |
| County | 04/27/66 | 19:40 | 1.00 in. | 0 | 0 | 0 | 0 |
| County | 05/17/66 | 18:30 | 1.75 in. | 0 | 0 | 0 | 0 |
| County | 05/08/68 | 18:25 | 0.75 in. | 0 | 0 | 0 | 0 |
| County | 06/22/69 | 8:45 | 1.75 in. | 0 | 0 | 0 | 0 |
| County | 06/14/74 | 21:15 | 1.75 in. | 0 | 0 | 0 | 0 |
| County | 04/24/75 | 17:50 | 0.75 in. | 0 | 0 | 0 | 0 |
| County | 09/18/75 | 22:30 | 1.00 in. | 0 | 0 | 0 | 0 |
| County | 06/01/77 | 17:00 | 1.00 in. | 0 | 0 | 0 | 0 |
| County | 04/05/78 | 17:30 | 1.00 in. | 0 | 0 | 0 | 0 |
| County | 05/10/79 | 18:45 | 1.00 in. | 0 | 0 | 0 | 0 |
| County | 12/02/82 | 11:15 | 1.00 in. | 0 | 0 | 0 | 0 |
| County | 04/30/83 | 20:55 | 1.75 in. | 0 | 0 | 0 | 0 |
| County | 03/15/84 | 16:00 | 1.75 in. | 0 | 0 | 0 | 0 |
| County | 03/15/84 | 16:20 | 1.00 in. | 0 | 0 | 0 | 0 |
| County | 04/03/84 | 16:40 | 0.75 in. | 0 | 0 | 0 | 0 |
| County | 05/13/85 | 15:35 | 1.00 in. | 0 | 0 | 0 | 0 |
| County | 05/13/85 | 18:15 | 0.75 in. | 0 | 0 | 0 | 0 |
| County | 05/30/85 | 8:40 | 1.50 in. | 0 | 0 | 0 | 0 |
| County | 05/30/85 | 9:05 | 0.75 in. | 0 | 0 | 0 | 0 |
| County | 05/30/85 | 9:30 | 0.75 in. | 0 | 0 | 0 | 0 |
| County | 06/02/85 | 23:40 | 1.25 in. | 0 | 0 | 0 | 0 |
| County | 04/05/88 | 16:55 | 0.75 in. | 0 | 0 | 0 | 0 |
| County | 05/25/89 | 8:00 | 1.00 in. | 0 | 0 | 0 | 0 |
| County | 05/25/89 | 20:30 | 1.75 in. | 0 | 0 | 0 | 0 |
| County | 08/27/89 | 18:00 | 1.00 in. | 0 | 0 | 0 | 0 |
| County | 06/07/90 | 13:22 | 1.25 in. | 0 | 0 | 0 | 0 |
| County | 02/14/92 | 20:55 | 0.75 in. | 0 | 0 | 0 | 0 |
| County | 09/09/92 | 18:13 | 0.75 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 04/10/94 | 17:25 | 0.75 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 04/15/94 | 2:30 | 0.75 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 06/28/94 | 1:05 | 0.75 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 07/08/95 | 16:53 | 0.75 in. | 0 | 0 | 0 | 0 |
| Ellington | 07/08/95 | 19:45 | 0.75 in. | 0 | 0 | 0 | 0 |
| Centertown | 05/25/97 | 16:40 | 0.88 in. | 0 | 0 | 0 | 0 |

| Figure 3.10.7b | Hailstorm | Events | s in Cole Co | unty 195 | 8 - 11/30/2 | 2009 | |
|---------------------|-----------|--------|-------------------------|----------|-------------|--------------------|----------------|
| General Location | Date | Time | Magnitude (diameter) | Deaths | Injuries | Property Damage | Crop Damage |
| Wardsville | 05/23/98 | 15:35 | 0.88 in. | 0 | 0 | 0 | 0 |
| Brazito | 05/23/98 | 15:37 | 1.00 in. | 0 | 0 | 0 | 0 |
| Lohman | 06/18/98 | 17:50 | 0.88 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 06/18/98 | 18:36 | 0.88 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 11/10/98 | 2:05 | 1.00 in. | 0 | 0 | 0 | 0 |
| Brazito | 04/08/99 | 17:40 | 1.75 in. | 0 | 0 | 0 | 0 |
| Brazito | 06/01/99 | 15:40 | 1.00 in. | 0 | 0 | 0 | 0 |
| Lohman | 03/26/00 | 14:06 | 1.75 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 03/26/00 | 14:35 | 0.88 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 06/04/00 | 18:12 | 1.00 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 06/04/00 | 18:16 | 1.75 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 06/04/00 | 18:28 | 1.75 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 05/06/01 | 20:15 | 0.75 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 05/12/02 | 16:30 | 0.75 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 12/17/02 | 21:25 | 0.75 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 12/17/02 | 21:30 | 0.88 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 12/18/02 | 2:29 | 0.88 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 12/18/02 | 2:36 | 1.75 in. | 0 | 0 | 0 | 0 |
| Russellville | 05/06/03 | 15:25 | 1.75 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 05/06/03 | 15:45 | 1.25 in. | 0 | 0 | 0 | 0 |
| Brazito | 05/06/03 | 15:51 | 2.00 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 05/06/03 | 15:51 | 2.00 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 05/06/03 | 15:53 | 1.75 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 05/06/03 | 15:58 | 1.00 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 05/06/03 | 16:15 | 1.75 in. | 0 | 0 | 0 | 0 |
| Lohman | 05/06/03 | 16:40 | 1.50 in. | 0 | 0 | 0 | 0 |
| Brazito | 01/12/05 | 17:32 | 0.75 in. | 0 | 0 | 0 | 0 |
| Brazito | 04/21/05 | 19:15 | 1.00 in. | 0 | 0 | 0 | 0 |
| Brazito | 04/21/05 | 19:17 | 1.75 in. | 0 | 0 | 0 | 0 |
| Brazito | 04/21/05 | 19:20 | 1.75 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 04/21/05 | 21:35 | 1.00 in. | 0 | 0 | 0 | 0 |
| St Martin | 04/21/05 | 21:35 | 1.00 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 04/21/05 | 21:45 | 0.75 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 04/21/05 | 21:45 | 0.88 in. | 0 | 0 | 0 | 0 |
| St Martin | 11/05/05 | 18:05 | 0.75 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 11/05/05 | 19:00 | 0.75 in. | 0 | 0 | 0 | 0 |

| Figure 3.10.7c | Figure 3.10.7c | | | | | | |
|-------------------------|----------------|------------|-------------------------|-------------|-------------|--------------------|----------------|
| | Hailstorm | Events | in Cole Co | unty 195 | 8 - 11/30/2 | 2009 | |
| General Location | Date | Time | Magnitude (diameter) | Deaths | Injuries | Property Damage | Crop Damage |
| Jefferson City | 03/12/06 | 23:05 | 1.75 in. | 0 | 0 | 0 | 0 |
| Brazito | 04/19/06 | 20:04 | 1.75 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 05/03/06 | 8:20 | 1.00 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 06/10/06 | 19:45 | 0.75 in. | 0 | 0 | 0 | 0 |
| Brazito | 04/03/07 | 11:50 | 1.00 in. | 0 | 0 | 0 | 0 |
| Russellville | 04/03/07 | 11:50 | 1.00 in. | 0 | 0 | 0 | 0 |
| Taos | 05/10/08 | 18:00 | 0.88 in. | 0 | 0 | 0 | 0 |
| Jefferson City | 06/16/08 | 4:13 | 0.75 in. | 0 | 0 | 0 | 0 |
| TOTALS : 0 0 0 0 | | | | | | | 0 |
| Source: http://ww | w4.ncdc.noaa | .gov/cgi-v | vin/wwcgi.dll?wv | vevent~stor | ms | | |

Measures of Probability and Severity

Probability: High

Severity: Moderate to High

Existing Mitigation Strategies

<u>Warning Systems</u>
The following warning systems are used in the Planning Area: Local television weather reports Local radio weather reports 9-1-1 call center and Public Emergency Broadcast Center Tornado sirens

Hailstorm Vulnerability

Jurisdictions: All Jurisdictions

Overview

All jurisdictions in Cole County are vulnerable to the effects of Hailstorms. All above ground structures, infrastructure, and vegetation are vulnerable to the effects of a Hailstorm and all other hazards associated with them (high winds, rain, flooding, flying debris, etc.) Damage from hail is dictated by the size and velocity of the stones and the location where they fall.

Potential Impact on Existing Structures

Previous occurrences of Hail damage, most recently in 2006, dictates that future damage will occur with the same results. Damage to windows, roofs, vehicles, siding, and vegetation are all possible, but would vary greatly in location, amount, and extent.

Figure 3.10.8 Estimated exposed structures

| | Impact Assessment Hailstorm | | | | | | | | | |
|--|--|------------|------------|--------------|-----------|--------------|-------------|--|--|--|
| | High Vulnerability = 10 - 100% of buildings impacted | | | | | | | | | |
| | 9 | | | ted Impact | | | | | | |
| | | | | ng Type | | | | | | |
| Jurisdiction | Residential | Commercial | Industrial | Agricultural | Religious | Governmental | Educational | | | |
| Planning Area | 25436 | 1479 | 355 | 162 | 186 | 1120 | 46 | | | |
| Cole County (unincorporated areas) | 9774 | 363 | 135 | 104 | 30 | 14 | 8 | | | |
| Jefferson City | 13782 | 1023 | 190 | 43 | 147 | 1095 | 32 | | | |
| Lohman | 83 | 9 | 1 | 1 | 2 | 1 | 0 | | | |
| Russellville | 419 | 17 | 2 | 3 | 2 | 2 | 2 | | | |
| St. Martins | 418 | 20 | 11 | 3 | 2 | 0 | 1 | | | |
| St. Thomas | 128 | 6 | 2 | 3 | 1 | 1 | 1 | | | |
| Taos | 324 | 12 | 6 | 0 | 1 | 2 | 1 | | | |
| Wardsville | 357 | 20 | 7 | 5 | 1 | 3 | 1 | | | |
| HAZUS MH | | | | | | | | | | |

Potential Impact on Future Development

Because of the random nature of this hazard, potential impacts of this hazard on future development are not quantifiable with the resources available.

Section 4: Mitigation Strategy

4.1 Hazard Mitigation Goals

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.

Hazard mitigation goals were developed during the planning process for the original Cole County/Jefferson City Natural Hazard Mitigation Plan in 2003-2004. For the current update, the Hazard Mitigation Technical Steering Committee reviewed these goals; language changes were made for clarification while retaining the essential intent of the original goals.

The five county hazard mitigation goals for the Cole County/Jefferson City Natural Hazard Mitigation Plan (2010) are:

- Goal 1: Mitigation Planning Mitigate effects of future natural hazards throughout the County through public and private cooperation.
- Goal 2: Mitigation Policy Develop policies that limit the impact of natural hazards on lives and property.
- Goal 3: Mitigation Programs Implement cost effective and feasible mitigation programs to protect lives and property of Cole County jurisdictions.
- Goal 4: Public Awareness Increase public awareness of natural hazards in order to make the public a greater partner in hazard mitigation planning.
- Goal 5: Future Development Promote hazard-proof development in the jurisdictions of Cole County.

4.2 Update of Mitigation Actions

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.

The original Project Steering Committee (2003-2004) was charged with developing a comprehensive range of mitigation actions to promote the agreed upon mitigation goals. Objectives were defined under each goal and mitigation actions were then developed to promote each objective. The following six categories of mitigation were considered in developing the mitigation actions:

- **Prevention tools** regulatory methods such as planning and zoning, building regulations, open space planning, land development regulations, and storm water management.
- **Property protection measures** acquisition of land, relocation of buildings, modifying at-risk structures, and floodproofing at-risk structures.
- Natural resource protection erosion and sediment control or wetlands protection.
- **Emergency services measures** warning systems, response capacity, critical facilities protection, and health and safety maintenance.
- **Structural mitigation** reservoirs, levees, diversions, channel modifications and storm sewers.
- **Public information** providing hazard maps and information, outreach programs, real estate disclosure, technical assistance and education.

No mitigation actions were eliminated from consideration when the original plan was written. The plan therefore contained a comprehensive list of mitigation actions which served as a starting point for update discussions.

The Technical Steering Committee for the update (2010) reviewed and discussed all the mitigation actions from the original plan. This was accomplished by analyzing and discussing each hazard and the actions focused on its mitigation. An individual focus on each hazard allowed for a comprehensive view of the hazard and possibilities for its mitigation. This approach was useful in developing appropriate new actions, when deemed important.

The existing mitigation actions were divided into four categories (completed, retained, modified, deleted) and new actions for the update were put in a fifth category (added).

Descriptions of the five categories are as follows:

- **Completed** Actions have been completed.
- **Retained** Actions have not been completed but are deemed important and appropriate for the updated plan OR actions have been completed but are ongoing mitigation activities.
- **Modified** Actions were in original plan but the focus or language has been changed to some degree.
- **Deleted** Actions were deemed unrealistic or inappropriate for the jurisdictions involved.
- Added New actions deemed important and appropriate for the updated plan.

The actions in each of these categories, along with explanatory information, can be seen in Figure 4.2.1a-h. In addition, new actions for hazards not profiled in the original plan (Levee Failure and Land Subsidence/Sinkhole) are shown in Figure 4.2.2.

| Figure 4.2.1a Assessment of Mitigation A | Actions in Original Plan (by Hazard) |
|--|---|
| Flood Mitigation Actions | Assessment for Update |
| Revise and update regulatory floodplain maps | Action RETAINED for update - currently in process; being reflown with LIDAR. |
| Complete Community Rating System Application | Action DELETED - work on application was begun in Jefferson City, but not in Cole County; assessed as politically impossible at current time. |
| Review Capital Improvement plan to ensure no public facilities are proposed for flood hazard areas (should be 2' above 500 year flood elevation) | Action MODIFIED for update to read "Ensure that public facilities proposed for floodplain will comply with the National Flood Insurance Program (NFIP)." |
| • Ensure public facilities also have adequate road access in event of a flood. | Action MODIFIED for update to read "Ensure public facilities have adequate road access above the floodplain on arterial and collector streets." |
| Set up centralized, coordinated permitting process to ensure compliance with floodplain regulations. | Action COMPLETED in County, Jefferson City, Wardsville, and Taos. (Both Wardsville and Taos have adopted the county's building codes.) Action RETAINED for update for jurisdictions of Centertown, Lohman, Russellville, St. Martins, and St. Thomas. |
| Continue development of storm water task force and ensure adequate maintenance of county's drainage systems | Action partially COMPLETED in Jefferson City - the Storm Water Task Force met and modified the Jefferson City Storm Water Ordinance with input from Cole County. Action MODIFIED for update to read "Continue development of storm water programs and ensure adequate maintenance of drainage systems." |
| Encourage participation in Community Rating System of National Flood Insurance Program (NFIP). Have all of Cole County Participate | Action MODIFIED for update; 'have all of Cole County participate' removed. |
| Capital Improvement Plan | Action DELETED for update - see explanations under subsections. |
| Develop plan for relocating public infrastructure out of flood prone areas | Action DELETED for update; assessed as unrealistic. |
| Establish reserve fund for relocating damaged infrastructure after next disaster | Action DELETED for update; assessed as unrealistic. |
| Establish system for evaluation and improvement of critical infrastructure throughout county | Action COMPLETED; this is in place. |
| Develop countywide storm water master plan | Action DELETED for update; assessed as unrealistic. |
| Construct storm water detention facilities to mitigate flood control in existing developments | Action DELETED for update; assessed as economically unrealistic. |
| Encourage state to adopt similar standards and regulations as county for state facilities and infrastructure within the County | Action DELETED for update; assessed as unrealistic. |
| Pass ordinance to not allow development in mapped floodway | Action MODIFIED for update; changed to "Encourage participation in the National Flood Insurance Program (NFIP)." |

| Figure 4.2.1b Assessment of Mitigation Actions in Original Plan (by Hazard) | |
|---|---|
| Flood Mitigation Actions | Assessment for Update |
| Review and update flood damage prevention ordinance to ensure maximum protection from flood hazard events | Action COMPLETED but RETAINED for update. County regulations were revised in 2005 and another revision will be undertaken in 2011-12; Jefferson City regulations were revised in March 2007. |
| Consider adopting temporary moratorium on building in flood hazard areas until ordinance is revised. | Action RETAINED for update; this is an ongoing recommendation. |
| • Raise minimum flood protection level from the Base Flood Elevation (BFE) to 2' above BFE. | Action DELETED for update because this would be covered by the CRS action. |
| • Consider prohibiting construction or significant improvements within 100-year floodplain. | Action DELETED for update because this would be covered by the CRS action. |
| Consider policies concerning repetitive loss and how to minimize those losses. | Action DELETED for update because this would be covered by the CRS action. |
| • Advise/assist property owners in retrofitting their homes and businesses to better respond to floods. | Action RETAINED for update; this is an ongoing action. |
| Develop cost estimates of protecting a facility vs. buyout | Action DELETED for update; assessed as unrealistic. |
| Evaluate access problems to critical infrastructure in the event of a flood. | Action RETAINED for update; this is an ongoing action. |
| Eliminate illegal discharges to storm water system to reduce health hazard | Action DELETED for update because this is covered under EPA regulations. |
| Ensure evacuation routes are adequate in the event of a major hazard. If needed, pursue methods for improving capacity. | Action RETAINED for update; this is an ongoing action. |
| Develop public education hazard awareness program | Action RETAINED for update; this is an ongoing action. |
| Request that the real estate Multiple Listing Service be amended to include notice of flood hazard and the requirement to purchase flood insurance | Action DELETED for update because this is Missouri State Law. |
| Establish flood awareness signs – show elevations of potential floodwaters at low water crossings and other prominent sites. Show flood water levels of 1993 floods | Action MODIFIED for update because national standards discourage putting up gauges showing elevations; new action reads "Establish flood warning signs at known flooding locations." Action COMPLETED in the County (three flood awareness signs posted at areas that flood) and in Jefferson City (sign reading "Prone to flash flooding" posted). |
| Acquire destroyed or substantially damaged properties and relocate people voluntarily | Action MODIFIED for update to include Wardsville. |
| Maintain resources for public on retrofitting and protection techniques | Action RETAINED for update; this is an ongoing action. Action COMPLETED in Jefferson City (resources are available on the Jefferson City website). |

| Figure 4.2.1c | | |
|---|---|--|
| Assessment of Mitigation Actions in Original Plan (by Hazard) | | |
| Flood Mitigation Actions | Assessment for Update | |
| Acquire properties susceptible to flood damage involuntarily | Action RETAINED for update; this is an ongoing action. | |
| Create pre-flood partnerships for buyout to meet homeowners needs | Action DELETED for update as this was assessed as a description of a step in the process. | |
| Repetitive flood loss properties targeted for buyout | Action DELETED for update as this was assessed as a description of a step in the process. | |
| Prioritize properties for acquisition | Action DELETED for update as this was assessed as a description of a step in the process. | |
| Develop plan for acquired property to become part of Parks and Recreation land so the area in undeveloped in perpetuity | Action DELETED for update as this was assessed as unrealistic for an involuntary buyout. | |
| Adopt procedures for review of subdivision plans that minimize flood problems | Action COMPLETED for County and Jefferson City; action RETAINED for update for jurisdictions of Centertown, Lohman, Russellville, St. Martins, St. Thomas, Taos, and Wardsville. | |
| Require developer to include adequate storm water retention facilities on new builds | Action MODIFIED for update; "require" changed to "encourage". | |
| Establish lowest floor elevation for new construction | Action MODIFIED for update; changed to "Establish lowest floor elevation for new construction at 1' above Base Flood Elevation (BFE)." | |
| • Evaluate design standards for storm water systems from 15-year event to 50-year event | Action DELETED for update; assessed as unrealistic. | |
| Revise bridge and culvert standards to prevent debris from clogging | Action MODIFIED for update; changed to "Maintain bridge and culvert standards to | |
| waterways | prevent debris from clogging waterways." | |
| 1. Adopt regulations that preserve riparian corridors in developments | Action COMPLETED by County and Jefferson City. Jefferson City adopted regulations in 2007. Action RETAINED for update for jurisdictions of Centertown, Lohman, Russellville, St. Martins, St. Thomas, Taos, and Wardsville. | |

| Figure 4.2.1d | |
|---|--|
| Assessment of Mitigation Actions Tornado/High Wind Mitigation Actions | Actions in Original Plan (by Hazard) Assessment for Update |
| Encourage local hotels/motels to provide their customers with high wind/tornado information including location and directions to local shelters, directions, and where to go in the hotel in the event if a disaster. | Action RETAINED for update; this is an ongoing action. |
| Encourage utility companies to continue to maintain power line right of way | Action RETAINED for update; this is an ongoing action. |
| Provide public education regarding the best tree species to plant near utility lines | Action RETAINED for update; this is an ongoing action. |
| When possible, utilize underground lines | Action RETAINED for update; this is an ongoing action. |
| Adopt and enforce latest model building codes and national engineering standards | Action MODIFIED for update to read, "Adopt and enforce appropriate building codes" |
| Ensure that architectural features are constructed in a way to minimize the creation of wind borne debris | Action DELETED for update; assessed as unrealistic. |
| Retrofit public buildings in order to make them more wind resistant | Action DELETED for update; assessed as unrealistic. |
| Brace high value equipment such as furnaces, water heaters, and above ground tanks | Action MODIFIED for update to read, "Encourage the bracing of high value equipment" |
| Ensure that manufactured homes are secured to ground to maximize their longevity | Action DELETED for update; this is covered in the building code. |
| Require new mobile home parks to have saferooms on the premises. | Action RETAINED for update but combined with another related action to read, "Encourage camping and RV facilities and mobile home parks to have safe rooms on the premises." |

| Figure 4.2.1e | | |
|---|--|--|
| Assessment of Mitigation Actions in Original Plan (by Hazard) | | |
| Tornado/High Wind Mitigation Actions | Assessment for Update | |
| Require camping and RV facilities to have saferooms on the premises. | Action MODIFIED for update and combined with another to read, "Encourage camping and RV facilities and mobile home parks to have saferooms on the premises." | |
| Establish formal agreements with appropriate shelter locations throughout Cole County | Action RETAINED for update; this is being done and will continue to be done. | |
| Encourage insurance companies to offer lower premium rates to owners who install manufactured homes on permanent foundations or who anchor homes securely | Action DELETED for update; manufactured homes must be anchored to get any insurance | |
| Require new residential construction to meet latest wind resistance standards | Action DELETED for update; this is covered in the building code. | |
| Anchor walls and roof to foundation with appropriate brackets. | Action DELETED for update; this is covered in the building code. | |
| • Require new masonry chimneys above 6' to have continuous vertical reinforcements to help resist high wind. | Action DELETED for update; this is covered in the building code. | |
| Require saferooms in houses without basements | Action DELETED for update; this is encouraged in the building code. | |
| Continue to alert the public of hazardous weather via early warning sirens/electronic notification system. | Action ADDED for update. | |
| Encourage the construction of tornado safe rooms | Action ADDED for update. | |

| Figure 4.2.1f | | |
|---|---|--|
| Assessment of Mitigation Actions in Original Plan (by Hazard) | | |
| Earthquake Mitigation Actions | Assessment for Update | |
| Encourage appropriate County and City staff to continually update their knowledge base regarding earthquake safety. | Action RETAINED for update; this is an ongoing action. | |
| Encourage property owners to purchase earthquake insurance | Action RETAINED for update; this is an ongoing action. | |
| Brace/reinforce items within critical infrastructure | Action RETAINED for update; this is an ongoing action. | |
| Brace high value equipment | Action RETAINED for update; this is an ongoing action. | |
| Brace equipment that could fall causing injury or block evacuation routes | Action RETAINED for update; this is an ongoing action. | |
| Provide backup power to all critical infrastructure such as police, fire, hospitals, and local government buildings | Action MODIFIED for update to add "designated shelters". | |
| Establish educational materials for public regarding potential problems an earthquake in Missouri could cause | Action RETAINED for update; this is an ongoing action. | |
| Encourage schools to include earthquake safety programs in with other emergency preparedness training | Action RETAINED for update; this is an ongoing action. | |
| Require developers to build earthquake resistant structures | Action MODIFIED for update to read "Require developers to build in accordance with locally accepted codes." | |
| Retrofit structures to new earthquake safety standards when | Action MODIFIED for update to read 'Encourage the retrofitting of structures to new | |
| undergoing renovations/improvements | earthquake safety standards when undergoing renovations/improvements." | |
| Encourage all water providers to install electric transfer switches and/or backup generators. | Action ADDED for update. | |

| Figure 4.2.1g | | |
|--|---|--|
| Assessment of Mitigation Actions in Original Plan (by Hazard) | | |
| Winter Storm/Ice Mitigation Actions | Assessment for Update | |
| Encourage utility companies to maintain right of way for power lines (see High Wind Mitigation Activities) | Action RETAINED for update; this is an ongoing action. | |
| Have alternate power supplies for fueling emergency vehicles | Action RETAINED for update; this is an ongoing action. | |
| Encourage fire and water districts to have alternate power supplies. | Action ADDED for update. | |
| Encourage cooperative agreements with utility providers to activate energy between utility districts | Action MODIFIED for update to read, "Encourage cooperative agreements between utility companies to help restore infrastructure post-event." | |
| Develop building codes that discourage heavy snowloads on rooftops | Action DELETED for update; snowloads on roofs covered in building code. | |
| Ensure that school buses have two way radios on board | Action MODIFIED to "Ensure that school buses have two way radio communications that meet or exceed FCC requirements." | |
| Encourage development of formal agreements with shelters that have alternative heating sources | Action RETAINED for update; this is an ongoing action. | |
| Identify vulnerable populations needing potential relocation to shelter in event of power outage | Action RETAINED for update; this is an ongoing action. | |
| Identify potential transportation | Action RETAINED for update; this is an ongoing action. | |
| Provide public education materials before storm events to inform people of the danger of icy roads | Action RETAINED for update; this is an ongoing action. | |
| Have emergency supplies available at homes | Action RETAINED for update; this is an ongoing action. | |
| Encourage safe driving through public education campaigns, websites, and community events. | Action RETAINED for update; this is an ongoing action. | |
| Ensure the ability to respond to a severe winter weather event through advance preparation of maintenance areas and acquisition of stocks of chemicals and fuel appropriate for the length of a typical event. | Action ADDED for update. | |

| Figure 4.2.1h | | |
|--|--|--|
| Assessment of Mitigation Actions in Original Plan (by Hazard) | | |
| Drought Mitigation Actions | Assessment for Update | |
| Identify multiple sources of water in areas currently receiving water from | A .: COMPLETED | |
| minimal supplies | Action COMPLETED. | |
| Encourage cooperative agreements between water districts and connect | Action COMPLETED. | |
| disparate water supplies as much as possible | ACTION COMPLETED. | |
| Encourage purchase of drought insurance for agricultural community | Action RETAINED for update; this is an ongoing action. | |
| Encourage public and private water providers to develop distribution | Action ADDED for update. | |
| systems so that they interconnect with established distribution systems. | Action ADDED for update. | |
| Wildfire Mitigation Actions | Assessment for Update | |
| Remove vegetation and combustible materials around critical | Action MODIFIED for update to read 'Encourage removal of vegetation and | |
| infrastructure | combustible materials around homes, businesses, and critical infrastructure." | |
| Encourage use of fire resistant utility poles in high risk areas | Action DELETED for update; assessed as not feasible. | |
| Build fire roads into dense forest or grasslands | Action DELETED for update; assessed as unnecessary. | |
| | Action MODIFIED for update to read "Encourage owners of homes and businesses to | |
| Re-roof homes with fire resistant shingles and materials | consider the use of fire resistant shingles in new construction and re-roofing | |
| | projects." | |
| Provide education to homeowners living near large fuel areas on what they | Action RETAINED for update; this is an ongoing action. | |
| can do to minimize risk (forest, grasslands, etc.) | Tetron RE17 in VED 101 update, this is an ongoing action. | |
| Heat Wave Mitigation Actions | Assessment for Update | |
| Provide educational materials for outdoor workers and school athletic | Action DELETED for update; public education on heat exposure is included under the | |
| organizations on the dangers of excessive heat exposure | action "Develop public education hazard awareness program". | |
| Dam Failure Mitigation Actions | Assessment for Update | |
| Develop land use regulations for development downstream from dam | Action MODIFIED for update to read "Encourage appropriate land use development | |
| | downstream from dams." | |
| Encourage risk assessment of structures within current "dam | Action DELETED for update; assessed as not feasible. | |
| shadow" | Action DELETED for update, assessed as not reastore. | |
| Develop regulations for road building on dams | Action MODIFIED for update to read "Discourage road building on dams." | |
| Overflow from dam should not pass over road surface | Action RETAINED for update; this is an ongoing action. | |
| Develop evacuation procedures for dam | Action MODIFIED for update to read "Assist owners of regulated high hazard dams | |
| | with development of the Emergency Action Plans (EAPs) required in conjunction | |
| | with the inundation studies being conducted." | |
| Be able to employ monitoring team for emergency situations | Action COMPLETED; this is in place. | |

Figure 4.2.2

Mitigation Actions Added to Plan for Hazards Not Profiled in Original Plan

Levee Failure Mitigation Actions

Continue to enforce flood damage prevention/floodplain management ordinances in compliance with NFIP requirements.

Land Subsidence/Sinkhole Mitigation Actions

Limit construction and development in known subsidence/sinkhole areas

Add sinkhole regulations to stream buffer/storm water ordinance.

4.3 Mitigation Goals, Objectives, and Actions

A comprehensive list of the goals, objectives, and mitigation actions for the Cole County/Jefferson City Natural Hazard Mitigation Plan (2010) are listed below. The mitigation actions listed are for the entire Planning Area; participating jurisdictions will differ in the specific actions undertaken in their jurisdictions.

Actions which address reducing the effects of hazards on new and/or existing buildings and infrastructure are indicated as such in parentheses following the actions (i.e. New, Existing, Both).

Goal 1: Mitigation Planning - Mitigate effects of future natural hazards throughout the County through public and private cooperation.

Objective 1.1 Incorporate mitigation planning and procedures into the community.

- 1.1.1 Revise and update regulatory floodplain maps. (Both)
- 1.1.2 Encourage participation in the National Flood Insurance Program (NFIP). (Both)
- 1.1.3 Encourage participation in Community Rating System of National Flood Insurance Program (NFIP). (Both)
- 1.1.4 Set up centralized, coordinated permitting process to ensure compliance with floodplain regulations. (Both)
- 1.1.5 Ensure that public facilities proposed for floodplain will comply with the National Flood Insurance Program (NFIP). (New)
- 1.1.6 Ensure public facilities have adequate road access above the floodplain on arterial and collector streets. (Both)
- 1.1.7 Continue development of storm water programs and ensure adequate maintenance of drainage systems. (Both)
- 1.1.8 Review and update school plans on an annual basis to ensure that they adequately address all potential threats from natural hazards.
- 1.1.9 Have alternate power supplies for fueling emergency vehicles. (Both)
- 1.1.10 Encourage fire and water districts to have alternate power supplies. (Both)
- 1.1.11 Encourage all water providers to install electric transfer switches and/or backup generators. (Both)
- 1.1.12 Encourage public and private water providers to develop distribution systems so that they interconnect with established distribution systems. (Both)
- 1.1.13 Encourage appropriate County and City staff to continually update their knowledge base regarding earthquake safety. (Both)
- 1.1.14 Ensure the ability to respond to a severe winter weather event through advance preparation of maintenance areas and acquisition of stocks of chemicals and fuel appropriate for the length of a typical event. (Both)

Objective 1.2 Encourage private involvement in mitigation activities.

- 1.2.1 Encourage local hotels/motels to provide their customers with high wind/tornado information including location and directions to local shelters, directions, and where to go in the hotel in the event of a disaster.
- 1.2.2 Encourage utility companies to continue to maintain power line right of way. (Both)
 - Provide public education regarding the best tree species to plant near utility lines. (Both)
 - When possible, utilize underground lines. (Both)
- 1.2.3 Encourage cooperative agreements between utility companies to help restore infrastructure post-event. (Both)
- 1.2.4 Encourage purchase of drought insurance for agricultural community.
- 1.2.5 Encourage property owners to purchase earthquake insurance. (Both)
- 1.2.6 Encourage owners of homes and businesses to consider the use of fire resistant shingles in new construction and re-roofing projects. (Both)

Goal 2: Mitigation Policy - Develop policies that limit the impact of natural hazards on lives and property.

Objective 2.1 Pass appropriate ordinances for mitigation efforts.

- 2.1.1 Review and update flood damage prevention ordinance to ensure maximum protection from flood hazard events. (Both)
 - Consider adopting temporary moratorium on building in flood hazard areas until ordinance is revised. (New)
 - Advise/assist property owners in retrofitting their homes and businesses to better respond to floods. (Existing)
- 2.1.2 Continue to enforce flood damage prevention/floodplain management ordinances in compliance with NFIP requirements. (Both)
- 2.1.3 Consider adopting temporary moratorium on building in flood hazard areas until participation in NFIP is finalized. (New)
- 2.1.4 Maintain bridge and culvert standards to prevent debris from clogging waterways. (Both)
- 2.1.5 Add sinkhole regulations to stream buffer/storm water ordinance. (New)
- 2.1.6 Adopt regulations that preserve riparian corridors in developments. (New)

Objective 2.2 Adopt new codes and standards.

- 2.2.1 Adopt and enforce appropriate model building codes and national engineering standards. (Both)
- 2.2.2 Encourage appropriate land use development downstream from dams. (New)
- 2.2.3 Discourage road building on dams. (New)
 - Overflow from dam should not pass over road surface. (Both)
- 2.2.4 Limit construction and development in known subsidence/sinkhole areas. (New)

Goal 3: Mitigation Programs - Implement cost effective and feasible mitigation programs to protect lives and property of Cole County jurisdictions.

Objective 3.1 Protect buildings and valuable assets.

- 3.1.1 Mitigate the effects of flooding on public infrastructure. (Both)
- 3.1.2 Brace/reinforce items within critical infrastructure. (Both)
 - Brace high value equipment. (Both)
 - Brace equipment that could fall causing injury or block evacuation routes. (Both)
- 3.1.3 Encourage the bracing of high value equipment such as furnaces, water heaters, and above ground tanks. (Both)
- 3.1.4 Provide backup power to all critical infrastructure such as police, fire, hospitals, local government buildings, and designated shelters. (Both)
- 3.1.5 Encourage removal of vegetation and combustible materials around homes, businesses, and critical infrastructure. (Both)
- 3.1.6 Evaluate access problems to critical infrastructure in the event of a flood. (Both)

Objective 3.2 Protect vulnerable populations.

- 3.2.1 Continue to alert the public of hazardous weather via early warning sirens/electronic notification system or establish a mass notification system where needed.
- 3.2.2 Ensure that school buses have two way radio communications that meet or exceed FCC requirements.
- 3.2.3 Ensure evacuation routes are adequate in the event of a major hazard. If needed, pursue methods for improving capacity.
- 3.2.4 Establish formal agreements with appropriate shelter locations throughout Cole County.
- 3.2.5 Encourage development of formal agreements with shelters that have alternative heating sources.
 - Identify vulnerable populations needing potential relocation to shelter in event of power outage.
 - Identify potential transportation.
- 3.2.6 Establish and maintain a system of temporary alternative placement sites ("safe houses") for emergency evacuation and shelter of school populations.
- 3.2.7 Encourage camping and RV facilities and mobile home parks to have safe rooms on the premises.
- 3.2.8 Encourage the construction of tornado safe rooms.
- 3.2.9 Assist owners of regulated high hazard dams with development of the Emergency Action Plans (EAPs) required in conjunction with the inundation studies being conducted.

Goal 4: Public Awareness - Increase public awareness of natural hazards in order to make the public a greater partner in hazard mitigation planning.

- 4.0.1 Develop public education hazard awareness program.
- 4.0.2 Establish flood warning signs at known flooding locations.
- 4.0.3 Establish educational materials for public regarding potential problems an earthquake in Missouri could cause. (Both)
- 4.0.4 Encourage schools to include earthquake safety programs in with other emergency preparedness training.
- 4.0.5 Provide public education materials before storm events to inform people of the danger of icy roads.
 - Have emergency supplies available at homes.
- 4.0.6 Encourage safe driving through public education campaigns, websites, and community events.
- 4.0.7 Provide education to homeowners living near large fuel areas (forest, grasslands, etc.) on what they can do to minimize risk. (Both)

Goal 5: Future Development - Promote hazard-proof development in the jurisdictions of Cole County.

- 5.0.1 Acquire destroyed or substantially damaged properties and relocate people voluntarily. (Existing)
- 5.0.2 Acquire properties in repetitively flooded areas involuntarily. (Existing)
- 5.0.3 Adopt procedures for review of subdivision plans that minimize flood problems. (New)
 - Encourage developer to include adequate storm water retention facilities on new builds. (New)
 - Establish lowest floor elevation for new construction at 1' above Base Flood Elevation (BFE). (New)
- 5.0.4 Require developers to build in accordance with locally accepted codes. (New)
- 5.0.5 Encourage the retrofitting of structures to new earthquake safety standards when undergoing renovations/improvements. (Existing)
- 5.0.6 Maintain resources for public on retrofitting and protection techniques. (Both)

Organization of Mitigation Action Information

In order to make the information on mitigation actions easily accessible in this plan, the actions have been organized in a number of different ways.

Mitigation Actions by Hazard Addressed (Figures 4.3.1-4.3.12)

The mitigation actions have been listed by individual hazard addressed in charts in Figures 4.3.1-4.3.12; the applicable jurisdictions are included in these charts.

Overview of Mitigation Actions including Hazards and Jurisdictions (Figure 4.3.13a-i)

The comprehensive list of mitigation actions is shown in charts in Figure 4.3.13a-i along with the hazards addressed and applicable jurisdictions. The following abbreviations have been used for hazards in these charts:

DF – Dam Failure

DR – Drought

EQ – Earthquake

HT – Extreme Heat

FL - Flood

SK – Land Subsidence/Sinkhole

LF – Levee Failure

WW – Severe Winter Weather

WF - Wildfire

WND – Windstorm

T-Tornado

HST – Hailstorm

Mitigation Actions by Participating Jurisdictions (Section 4.4)

Finally, the mitigation actions for each participating jurisdiction, and plans for implementing the actions, are discussed under Prioritization, Implementation, and Administration (Section 4.4).

Mitigation Actions by Hazard Addressed (Figures 4.3.1-4.3.12)

| Figure | 4.3.1 | | | | | | | | | | | |
|----------|---|--------|-----|--------|--------------|-------------|------------|------|------------|-------------|------------|-----------|
| | Mitigation Actions for Dam Failure | | | | - | | | | | | | |
| Action # | MITIGATION ACTIONS | County | of. | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-V | JC Schools | Lincoln U |
| 2.2.2 | Encourage appropriate land use development downstream from dams. | X | X | | | | | X | X | | | |
| 2.2.3 | Discourage road building on dams. | v | х | | | | | | | | | |
| 2.2.3 | Overflow from dam should not pass over road surface. | X | Λ | | | | | | | | | |
| 3.2.9 | Assist owners of regulated high hazard dams with development of the Emergency Action Plans (EAPs) required in | х | х | | | | | х | | | | |
| 3.2.9 | conjunction with the inundation studies being conducted. | Λ | Λ | | | | | Λ | | | | |
| 4.0.1 | Develop public education hazard awareness program. | X | X | X | X | X | X | X | X | | | |

| Figure | 4.3.2 | | | | | | | | | | | |
|----------|---|--------|----|--------|--------------|-------------|------------|------|------------|-------------|------------|-----------|
| | Mitigation Actions for Drought | | | | | | | | | | | |
| Action # | MITIGATION ACTIONS | County | JC | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-V | JC Schools | Lincoln U |
| 1.1.12 | Encourage public and private water providers to develop distribution systems so that they interconnect with established distribution systems. | x | x | | х | | | | X | | | |
| 1.2.4 | Encourage purchase of drought insurance for agricultural community. | X | X | X | X | X | X | X | X | | | |
| 4.0.1 | Develop public education hazard awareness program. | X | X | X | X | X | X | X | X | | | |

| Figure 4 | .3.3 Mitigation Actions for Earthquake | | | | | | | | | | | |
|----------|--|--------|----|--------|--------------|-------------|------------|------|------------|-------------|------------|-----------|
| Action # | MITIGATION ACTIONS | County | or | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-V | JC Schools | Lincoln U |
| 1.1.8 | Review and update school plans on an annual basis to ensure that they adequately address all potential threats from natural hazards. | | | | | | | | | X | х | х |
| 1.1.9 | Have alternate power supplies for fueling emergency vehicles. | Х | Х | Х | Х | х | X | X | Х | | | |
| 1.1.10 | Encourage fire and water districts to have alternate power supplies. | X | | | | | | | | | | |
| 1.1.11 | Encourage all water providers to install electric transfer switches and/or backup generators. | X | X | | X | | | | X | | | |
| 1.1.13 | Encourage appropriate County and City staff to continually update their knowledge base regarding earthquake safety. | X | х | X | х | X | x | | X | | | |
| 1.2.5 | Encourage property owners to purchase earthquake insurance. | Х | Х | | Х | Х | | | Х | | | |
| 2.2.1 | Adopt and enforce appropriate model building codes and national engineering standards. | X | X | X | X | X | X | X | X | | | |
| | Brace/reinforce items within critical infrastructure. | | | | | | | | | | | |
| 3.1.2 | · Brace high value equipment. | X | X | X | X | X | X | X | X | | | |
| | Brace equipment that could fall causing injury or block evacuation routes. | | | | | | | | | | | |
| 3.1.3 | Encourage the bracing of high value equipment such as furnaces, water heaters, and above ground tanks. | X | X | | X | X | | | X | | | |
| 3.1.4 | Provide backup power to all critical infrastructure such as police, fire, hospitals, local government buildings, and designated shelters. | х | х | х | х | х | X | X | X | | | |
| 3.2.4 | Establish formal agreements with appropriate shelter locations throughout Cole County. | Х | Х | Х | Х | Х | X | X | Х | | | |
| 3.2.6 | Establish and maintain a system of temporary alternative placement sites ("safe houses") for emergency evacuation and shelter of school populations. | | х | | X | | | | X | X | х | х |
| 4.0.1 | Develop public education hazard awareness program. | Х | Х | Х | Х | X | Х | X | Х | | | |
| 4.0.3 | Establish educational materials for public regarding potential problems an earthquake in Missouri could cause. | Х | Х | Х | Х | х | Х | X | Х | | | |
| 4.0.4 | Encourage schools to include earthquake safety programs in with other emergency preparedness training. | X | X | X | Х | X | X | X | X | | | |
| 5.0.4 | Require developers to build in accordance with locally accepted codes. | X | X | X | X | X | X | X | X | | | |
| 5.0.5 | Encourage the retrofitting of structures to new earthquake safety standards when undergoing renovations/improvements. | X | X | X | X | X | X | X | X | | | |

| Figure 4 | 1.3.4 | | | | | | | | | | | |
|----------|--|--------|-------|--------|--------------|-------------|------------|------|------------|-------------|------------|-----------|
| | Mitigation Actions for Extreme Heat | | | | | | | | | | | |
| Action # | MITIGATION ACTIONS | County | or or | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-V | JC Schools | Lincoln U |
| 1.1.8 | Review and update school plans on an annual basis to ensure that they adequately address all potential threats from natural hazards. | | | | | | | | | X | x | X |
| 1.1.9 | Have alternate power supplies for fueling emergency vehicles. | X | X | X | X | X | X | X | X | | | |
| 1.1.10 | Encourage fire and water districts to have alternate power supplies. | X | | | | | | | | | | |
| 1.1.11 | Encourage all water providers to install electric transfer switches and/or backup generators. | X | X | | X | | | | X | | | |
| 3.1.4 | Provide backup power to all critical infrastructure such as police, fire, hospitals, local government buildings, and designated shelters. | X | X | X | X | X | X | x | X | | | |
| 3.2.4 | Establish formal agreements with appropriate shelter locations throughout Cole County. | X | X | X | X | X | X | X | X | | | |
| 3.2.6 | Establish and maintain a system of temporary alternative placement sites ("safe houses") for emergency evacuation and shelter of school populations. | | X | | X | | | | X | X | x | X |
| 4.0.1 | Develop public education hazard awareness program. | X | X | X | X | X | X | X | X | | | |

| Figure 4 | 4.3.5a | | | | | | | | | | | |
|----------|--|--------|----|--------|--------------|-------------|------------|------|------------|-------------|------------|-----------|
| | Mitigation Actions for Flood | | | | | | | | | | | |
| Action # | MITIGATION ACTIONS | County | ၁Ր | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-V | JC Schools | Lincoln U |
| 1.1.1 | Revise and update regulatory floodplain maps. | X | X | X | X | X | X | X | X | | | |
| 1.1.2 | Encourage participation in the National Flood Insurance Program (NFIP). | | | X | | X | | X | | | | |
| 1.1.3 | Encourage participation in Community Rating System of National Flood Insurance Program (NFIP). | X | X | | | X | | X | X | | | |
| 1.1.4 | Set up centralized, coordinated permitting process to ensure compliance with floodplain regulations. | | | X | | X | | X | | | | |
| 1.1.5 | Ensure that public facilities proposed for floodplain will comply with the National Flood Insurance Program (NFIP). | X | X | | | | | | | | | |
| 1.1.6 | Ensure public facilities have adequate road access above the floodplain on arterial and collector streets. | X | X | | | | | | | | | |
| 1.1.7 | Continue development of storm water programs and ensure adequate maintenance of drainage systems. | X | X | | X | X | X | | X | | | |
| 1.1.8 | Review and update school plans on an annual basis to ensure that they adequately address all potential threats from natural hazards. | | | | | | | | | х | х | x |

| Figure 4 | 4.3.5b Mitigation Actions for Flood | | | | | | | | | | | |
|----------|---|--------|-------|--------|--------------|-------------|------------|------|------------|-------------|------------|-----------|
| Action # | MITIGATION ACTIONS | County | or or | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-V | JC Schools | Lincoln U |
| | Review and update flood damage prevention ordinance to ensure maximum protection from flood hazard events. | | | | | | | | | | | |
| 2.1.1 | Consider adopting temporary moratorium on building in flood hazard areas until ordinance is revised. Advise/assist property owners in retrofitting their homes and businesses to better respond to floods. | Х | X | | | | | | X | | | |
| 2.1.2 | Continue to enforce flood damage prevention/floodplain management ordinances in compliance with NFIP requirements. | х | х | | | | | | х | | | |
| 2.1.3 | Consider adopting temporary moratorium on building in flood hazard areas until participation in NFIP is finalized. | | | | | | | X | | | | |
| 2.1.4 | Maintain bridge and culvert standards to prevent debris from clogging waterways. | X | X | X | X | X | X | X | X | | | |
| 2.1.6 | Adopt regulations that preserve riparian corridors in developments. | | | | | | | | X | | | |
| 3.1.1 | Mitigate the effects of flooding on public infrastructure. | X | X | | | | | | X | | | |
| 3.1.6 | Evaluate access problems to critical infrastructure in the event of a flood. | X | X | X | X | X | X | X | X | | | |
| 3.2.2 | Ensure that school buses have two way radio communications that meet or exceed FCC requirements. | | | | | | | | | X | X | |
| 3.2.3 | Ensure evacuation routes are adequate in the event of a major hazard. If needed, pursue methods for improving capacity. | x | X | X | х | х | x | X | X | | | |
| 3.2.4 | Establish formal agreements with appropriate shelter locations throughout Cole County. | Х | Х | X | Х | Х | Х | X | Х | | | |
| 4.0.1 | Develop public education hazard awareness program. | Х | X | X | X | Х | X | X | X | | | |
| 4.0.2 | Establish flood warning signs at known flooding locations. | Х | Х | | Х | | | Х | X | | | |
| 5.0.1 | Acquire destroyed or substantially damaged properties and relocate people voluntarily. | Х | X | | | | | | Х | | | |
| 5.0.2 | Acquire properties in repetitively flooded areas involuntarily. | Х | Х | | | | | | | | 一 | |
| | Adopt procedures for review of subdivision plans that minimize flood problems. | | | | | | | | | | コ | |
| 5.0.3 | Encourage developer to include adequate storm water retention facilities on new builds. | | | | х | х | | X | X | | | |
| | · Establish lowest floor elevation for new construction at 1' above Base Flood Elevation (BFE). | | | | | | | | | | | |
| 5.0.6 | Maintain resources for public on retrofitting and protection techniques. | X | X | X | X | X | X | X | X | | | |

| Figure | 4.3.6 | | | | | | | | | | | |
|----------|--|--------|----|--------|--------------|-------------|------------|------|------------|-------------|------------|-----------|
| | Mitigation Actions for Land Subsidence/Sinkhole | | | | | | | | | | | |
| Action # | MITIGATION ACTIONS | County | JC | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-V | JC Schools | Lincoln U |
| 2.1.5 | Add sinkhole regulations to stream buffer/storm water ordinance. | | X | | | | | | | | | |
| 2.2.4 | Limit construction and development in known subsidence/sinkhole areas. | | X | | | | | | | | | |
| 4.0.1 | Develop public education hazard awareness program. | X | X | X | X | X | X | X | X | | | |

| Figure 4 | 4.3.7 | | | | | | | | | | | |
|----------|--|--------|----|--------|--------------|-------------|------------|------|------------|-------------|------------|-----------|
| | Mitigation Actions for Levee Failure | | | | | | | | | | | |
| Action # | MITIGATION ACTIONS | County | JC | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-I | JC Schools | Lincoln U |
| 2.1.2 | Continue to enforce flood damage prevention/floodplain management ordinances in compliance with NFIP requirements. | X | X | | | | | | x | | | |
| 4.0.1 | Develop public education hazard awareness program. | X | X | X | X | X | X | X | X | | | |

| Figure 4 | | | | | | | | | | | | |
|----------|--|--------|---|--------|--------------|-------------|------------|------|------------|-------------|-------------------|-----------|
| Action # | Mitigation Actions for Severe Winter Weather MITIGATION ACTIONS | County | ၁ | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-V | JC Schools | Lincoln U |
| 1.1.8 | Review and update school plans on an annual basis to ensure that they adequately address all potential threats from natural hazards. | | | | | | | | | X | X | X |
| 1.1.9 | Have alternate power supplies for fueling emergency vehicles. | X | X | X | X | X | X | X | X | | \square | |
| | Encourage fire and water districts to have alternate power supplies. | X | | | | | | | | | \longrightarrow | |
| 1.1.11 | Encourage all water providers to install electric transfer switches and/or backup generators. | X | X | | X | | | | X | | igspace | |
| 1.1.14 | Ensure the ability to respond to a severe winter weather event through advance preparation of maintenance areas and acquisition of stocks of chemicals and fuel appropriate for the length of a typical event. | X | X | X | X | X | x | X | X | x | X | X |
| 1.2.2 | Encourage utility companies to continue to maintain power line right of way. Provide public education regarding the best tree species to plant near utility lines. When possible, utilize underground lines. | х | x | x | x | х | х | x | х | | | |
| 1.2.3 | Encourage cooperative agreements between utility companies to help restore infrastructure post-event. | Х | Х | X | Х | Х | X | Х | Х | | | |
| 3.1.4 | Provide backup power to all critical infrastructure such as police, fire, hospitals, local government buildings, and designated shelters. | х | х | х | х | х | х | х | х | | | |
| 3.2.2 | Ensure that school buses have two way radio communications that meet or exceed FCC requirements. | | | | | | | | | X | х | |
| 3.2.4 | Establish formal agreements with appropriate shelter locations throughout Cole County. | X | X | X | X | Х | X | X | Х | | | |
| 3.2.5 | Encourage development of formal agreements with shelters that have alternative heating sources. Identify vulnerable populations needing potential relocation to shelter in event of power outage. Identify potential transportation. | х | х | Х | Х | Х | х | Х | х | | | |
| 4.0.1 | Develop public education hazard awareness program. | X | X | X | X | X | X | X | X | | | |
| 4.0.5 | Provide public education materials before storm events to inform people of the danger of icy roads. Have emergency supplies available at homes. | X | X | X | X | X | X | Х | X | | | |
| 4.0.6 | Encourage safe driving through public education campaigns, websites, and community events. | X | X | | X | | | | X | | | |

| Figure 4 | 4.3.9 Mitigation Actions for Wildfire | | | | | | | | | | | |
|----------|--|--------|----|--------|--------------|-------------|------------|------|------------|-------------|---|-----------|
| Action # | MITIGATION ACTIONS | County | 25 | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-V | | Lincoln U |
| 1.1.9 | Have alternate power supplies for fueling emergency vehicles. | X | X | X | X | X | X | X | X | | | |
| 1.1.10 | Encourage fire and water districts to have alternate power supplies. | X | | | | | | | | | | |
| 1.1.11 | Encourage all water providers to install electric transfer switches and/or backup generators. | X | x | | X | | | | X | | | |
| 1.1.12 | Encourage public and private water providers to develop distribution systems so that they interconnect with established distribution systems. | X | X | | X | | | | X | | | |
| 1.2.6 | Encourage owners of homes and businesses to consider the use of fire resistant shingles in new construction and re- roofing projects. | X | X | X | X | X | X | х | X | | | |
| 2.2.1 | Adopt and enforce appropriate model building codes and national engineering standards. | X | X | X | X | X | X | X | X | | | |
| 3.1.4 | Provide backup power to all critical infrastructure such as police, fire, hospitals, local government buildings, and designated shelters. | x | x | X | X | X | X | х | X | | | |
| 3.1.5 | Encourage removal of vegetation and combustible materials around homes, businesses, and critical infrastructure. | x | x | X | X | X | X | x | X | | | |
| 3.2.6 | Establish and maintain a system of temporary alternative placement sites ("safe houses") for emergency evacuation and shelter of school populations. | | x | | X | | | | X | x | х | х |
| 4.0.1 | Develop public education hazard awareness program. | X | X | X | X | X | X | X | X | | | |
| 4.0.7 | Provide education to homeowners living near large fuel areas (forest, grasslands, etc.) on what they can do to minimize risk. | X | X | х | X | X | X | х | X | | | |

| Figure 4 | 4.3.10 Mitigation Actions for Windstorm | | | | | | | | | | | |
|----------|---|--------|----|--------|--------------|-------------|------------|------|------------|-------------|----------|-----------|
| Action # | MITIGATION ACTIONS | County |)C | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-V | | Lincoln U |
| 1.1.8 | Review and update school plans on an annual basis to ensure that they adequately address all potential threats from natural hazards. | | | | | | | | | X | х | х |
| | Have alternate power supplies for fueling emergency vehicles. | X | X | X | X | X | X | X | X | | \dashv | _ |
| | Encourage fire and water districts to have alternate power supplies. | X | | | | | | | | | \dashv | |
| 1.1.11 | Encourage all water providers to install electric transfer switches and/or backup generators. | X | X | | X | | | | X | | | _ |
| 1.2.1 | Encourage local hotels/motels to provide their customers with high wind/tornado information including location and directions to local shelters, directions, and where to go in the hotel in the event of a disaster. | X | X | | | | | | | | | |
| | Encourage utility companies to continue to maintain power line right of way. | | | | | | | | | | | |
| 1.2.2 | Provide public education regarding the best tree species to plant near utility lines. | X | X | X | X | X | X | Х | X | | | |
| 1.2.2 | When possible, utilize underground lines. | | | | | | | | | | \dashv | \dashv |
| 1.2.3 | Encourage cooperative agreements between utility companies to help restore infrastructure post-event. | X | X | X | X | X | X | X | X | | \dashv | - |
| 2.2.1 | Adopt and enforce appropriate model building codes and national engineering standards. | X | X | X | X | X | X | X | X | | \dashv | _ |
| 3.1.4 | Provide backup power to all critical infrastructure such as police, fire, hospitals, local government buildings, and designated shelters. | X | X | X | X | X | X | X | X | | | |
| 3.2.1 | Continue to alert the public of hazardous weather via early warning sirens/electronic notification system or establish a mass notification system where needed. | X | X | X | X | X | X | Х | X | | | х |
| 3.2.2 | Ensure that school buses have two way radio communications that meet or exceed FCC requirements. | | | | | | | | | X | X | |
| 3.2.4 | Establish formal agreements with appropriate shelter locations throughout Cole County. | X | X | X | X | X | X | X | X | | | |
| 3.2.6 | Establish and maintain a system of temporary alternative placement sites ("safe houses") for emergency evacuation and shelter of school populations. | | х | | х | | | | x | х | х | х |
| 3.2.8 | Encourage the construction of tornado safe rooms. | X | Х | | X | X | | | X | X | Х | |

| Figure 4 | 4.3.11 | | | | | | | | | | | |
|----------|--|--------|----|--------|--------------|-------------|------------|------|------------|-------------|------------|-----------|
| | Mitigation Actions for Hailstorm | | | | | | | | | | | |
| Action # | MITIGATION ACTIONS | County | JC | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-V | JC Schools | Lincoin u |
| 1.1.8 | Review and update school plans on an annual basis to ensure that they adequately address all potential threats from natural hazards. | | | | | | | | | X | x | х |
| 2.2.1 | Adopt and enforce appropriate model building codes and national engineering standards. | X | X | X | X | X | X | X | X | | | |
| 4.0.1 | Develop public education hazard awareness program. | X | X | X | X | X | X | X | X | | | |

| Figure 4 | I.3.12 Mitigation Actions for Tornado | | | | | | | | | | | |
|----------|---|--------|----|--------|--------------|-------------|------------|------|------------|-------------|------------|-----------|
| Action # | MITIGATION ACTIONS | County | ၁၄ | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-V | JC Schools | Lincoln U |
| 1.1.8 | Review and update school plans on an annual basis to ensure that they adequately address all potential threats from natural hazards. | | | | | | | | | X | х | X |
| 1.1.9 | Have alternate power supplies for fueling emergency vehicles. | X | X | X | X | Х | X | X | X | | | |
| 1.1.10 | Encourage fire and water districts to have alternate power supplies. | X | | | | | | | | | | |
| 1.1.11 | Encourage all water providers to install electric transfer switches and/or backup generators. | X | X | | X | | | | X | | | |
| 1.2.1 | Encourage local hotels/motels to provide their customers with high wind/tornado information including location and directions to local shelters, directions, and where to go in the hotel in the event of a disaster. | X | х | | | | | | | | | |
| 1.2.2 | Encourage utility companies to continue to maintain power line right of way. Provide public education regarding the best tree species to plant near utility lines. When possible, utilize underground lines. | х | x | x | x | x | x | x | x | | | |
| 1.2.3 | Encourage cooperative agreements between utility companies to help restore infrastructure post-event. | Х | Х | X | Х | Х | Х | X | Х | | | |
| 2.2.1 | Adopt and enforce appropriate model building codes and national engineering standards. | Х | Х | X | X | Х | Х | X | Х | | | |
| 3.1.3 | Encourage the bracing of high value equipment such as furnaces, water heaters, and above ground tanks. | Х | Х | | Х | Х | | | Х | | | |
| 3.1.4 | Provide backup power to all critical infrastructure such as police, fire, hospitals, local government buildings, and designated shelters. | х | х | X | х | х | х | х | х | | | |
| 3.2.1 | Continue to alert the public of hazardous weather via early warning sirens/electronic notification system or establish a mass notification system where needed. | х | х | X | X | х | X | Х | X | | | х |
| 3.2.2 | Ensure that school buses have two way radio communications that meet or exceed FCC requirements. | | | | | | | | | X | X | |
| 3.2.4 | Establish formal agreements with appropriate shelter locations throughout Cole County. | X | X | X | X | X | X | X | X | | | |
| 3.2.6 | Establish and maintain a system of temporary alternative placement sites ("safe houses") for emergency evacuation and shelter of school populations. | | х | | X | | | | X | X | X | X |
| 3.2.7 | Encourage camping and RV facilities and mobile home parks to have safe rooms on the premises. | X | X | | X | | | | | | | |
| 3.2.8 | Encourage the construction of tornado safe rooms. | X | X | | X | Х | | | X | X | X | |
| 4.0.1 | Develop public education hazard awareness program. | X | X | X | X | X | X | X | X | | | |

Overview of Mitigation Actions by Hazard and Jurisdiction (Figure 4.3.13a-i)

| Figure 4.3.13 a | | | Overview of Mitigation Actions by Hazard and Jurisdi | ction | | | | | | | | | | | |
|--|---|----------|--|---|--------|----|--------|--------------|-------------|------------|------|------------|-------------|------------|-----------|
| Goal | Objective | Action # | MITIGATION ACTIONS | Hazards Addressed | County | ၁င | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-V | JC Schools | Lincoln U |
| | σ | 1.1.1 | Revise and update regulatory floodplain maps | FL | X | X | X | X | X | X | X | X | | _ | |
| ıtural orivate | nto th | 1.1.2 | Encourage participation in the National Flood Insurance Program (NFIP). | FL | | | X | | X | | X | | | | |
| ture na | and procedures into the | 1.1.3 | Encourage participation in Community Rating System of National Flood Insurance Program (NFIP). | FL | X | Х | | | X | | х | X | | | |
| s of fui publi | procec | 1.1.4 | Set up centralized, coordinated permitting process to ensure compliance with floodplain regulations. | FL | | | X | | X | | X | | | | |
| effect hrough on. | | 1.1.5 | Ensure that public facilities proposed for floodplain will comply with the National Flood Insurance Program (NFIP). | FL | x | X | | | | | | | | | |
| - Mitigate ef County thro cooperation. | n planning a | 1.1.6 | Ensure public facilities have adequate road access above the floodplain on arterial and collector streets. | FL | X | X | | | | | | | | | |
| ning - N t the Co | gation | 1.1.7 | Continue development of storm water programs and ensure adequate maintenance of drainage systems | FL | X | х | | X | X | X | | X | | | |
| Mitigation Planning - Mitigate effects of future natural hazards throughout the County through public and private cooperation. | 1.1 Incorporate mitigation planning community | 1.1.8 | Review and update school plans on an annual basis to ensure that they adequately address all potential threats from natural hazards. | EQ, HT, WW, FL, WST, T, HST | | | | | | | | | X | X | X |

| Figure 4.3.13 b |) | | Overview of Mitigation Actions by Hazard and Jurisdi | ction | | | | | | | | | | | |
|--|---|----------|--|----------------------------------|--------|----|--------|--------------|-------------|------------|------|------------|-------------|------------|-----------|
| Goal | Objective | Action # | MITIGATION ACTIONS | Hazards Addressed | County | ၁၄ | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-V | JC Schools | LINCOIN U |
| ds throughout the n. | he community. | 1.1.9 | Have alternate power supplies for fueling emergency vehicles | EQ, HT, WW, WF, WST, | X | Х | X | Х | X | х | X | X | | | |
| future natural hazar d private cooperatio | id procedures into tl | 1.1.10 | Encourage fire and water districts to have alternate power supplies. | EQ, HT, WW, WF, WST, | x | | | | | | | | | | |
| Mitigation Planning - Mitigate effects of future natural hazards throughout the County through public and private cooperation. | 1.1 Incorporate mitigation planning and procedures into the community | 1.1.11 | Encourage all water providers to install electric transfer switches and/or backup generators. | EQ, HT, WW, WF, WST, | Х | х | | х | | | | x | | | |
| lanning Count | orate m | 1.1.12 | Encourage public and private water providers to develop distribution systems so that they interconnect with established distribution systems. | DR, WF | X | х | | х | | | | X | | | |
| tion F | ncorp | 1.1.13 | Encourage appropriate County and City staff to continually update their knowledge base regarding earthquake safety. | EQ | X | X | X | X | X | X | | X | | | |
| 1. Mitiga | 1.1 | 1.1.14 | Ensure the ability to respond to a severe winter weather event through advance preparation of maintenance areas and acquisition of stocks of chemicals and fuel appropriate for the length of a typical event. | ww | X | X | X | X | X | X | X | X | X | х | X |

| Figure 4.3.13 o | : | | Overview of Mitigation Actions by Hazard and Jurisdi | ction | | | | | | | | | | |
|--|------------------------------------|----------|---|----------------------|--------|---|--------|--------------|-------------|------------|------|------------|--------------------|----------------------|
| Goal | Objective | Action # | MITIGATION ACTIONS | Hazards Addressed | County | C | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-V | JC schools Lincoln U |
| ts of future ty through n. | mitigation | 1.2.1 | Encourage local hotels/motels to provide their customers with high wind/tornado information including location and directions to local shelters, directions, and where to go in the hotel in the event Of a disaster. | WST, T | х | X | | | | | | | | |
| . Mitigation Planning - Mitigate effects of future natural hazards throughout the County through public and private cooperation. | private involvement in activities. | 1.2.2 | Encourage utility companies to continue to maintain power line right of way Provide public education regarding the best tree species to plant near utility lines When possible, utilize underground lines | WW, WST, T | X | Х | X | Х | X | X | X | X | | |
| Mitigation Planning - Mit atural hazards throughou public and private | | 1.2.3 | Encourage cooperative agreements between utility companies to help restore infrastructure post-event. | WW, WST, T | X | х | х | х | Х | X | x | x | | |
| yatio I haz pu | Encourage | | Encourage purchase of drought insurance for agricultural community | DR | X | X | X | X | X | X | X | X | $oldsymbol{\perp}$ | \bot |
| litiç ura | E | 1.2.5 | Encourage property owners to purchase earthquake insurance | EQ | X | X | | X | X | | | X | _ | |
| 1. N nat | 1.2 | 1.2.6 | Encourage owners of homes and businesses to consider the use of fire resistant shingles in new construction and re-roofing projects. | WF | X | X | X | X | X | X | x | X | | |

| Figure 4.3.13 c | i | | Overview of Mitigation Actions by Hazard and Jurisdic | ction | | | | | | • | • | • | | |
|--|---|----------|--|----------------------|--------|----|--------|--------------|-------------|------------|------|------------|-------------|-------------------------|
| Goal | Objective | Action # | MITIGATION ACTIONS | Hazards Addressed | County |)C | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-V | JC Schools Lincoln U |
| ies that on lives | ٥٢ | | Review and update flood damage prevention ordinance to ensure maximum protection from flood hazard events | FL | | | | | | | | | | |
| policies ards on | nces for | 2.1.1 | · Consider adopting temporary moratorium on building in flood hazard areas until ordinance is revised. | FL | X | x | | | | | | X | | |
| | ordinances forts. | | · Advise/assist property owners in retrofitting their homes and businesses to better respond to floods. | FL | | | | | | | | | | |
| olicy - Develo t of natural ha and property. | oriate ion ef | 2.1.2 | Continue to enforce flood damage prevention/floodplain management ordinances in compliance with NFIP requirements. | FL, LF | X | X | | | | | | х | | |
| P 56 | appropriate ordin: mitigation efforts. | 2.1.3 | Consider adopting temporary moratorium on building in flood hazard areas until participation in NFIP is finalized. | FL | | | | | | | х | | | |
| Mitigation iit the impa | 1 Pass | 2.1.4 | Maintain bridge and culvert standards to prevent debris from clogging waterways | FL | X | х | х | x | х | х | х | х | | |
| ä. ⊠ | 2.1 | 2.1.5 | Add sinkhole regulations to stream buffer/storm water ordinance. | SK | | X | | | | | | | | |
| .2. ≣ | | 2.1.6 | Adopt regulations that preserve riparian corridors in developments | FL | | | | | | | | X | | |

| Figure 4.3.13 e | | | Overview of Mitigation Actions by Hazard and Jurisdi | ction | | - | | | | | | | | | |
|---|--|----------|---|----------------------------------|--------|----|--------|--------------|-------------|------------|------|------------|-------------|------------|-----------|
| Goal | Objective | Action # | MITIGATION ACTIONS | Hazards Addressed | County |)C | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-V | JC Schools | Lincoln U |
| 2. Mitigation Policy - Develop policies that limit the impact of natural hazards on lives and property. | Adopt new codes and standards. | 2.2.1 | Adopt and enforce appropriate model building codes and national engineering standards | EQ, WF, WST, T, HST | X | X | X | X | X | X | X | X | | | |
| tiga pol npa ds d | pt r star | 2.2.2 | Encourage appropriate land use development downstream from dams. | DF | Х | Х | | | | | X | Х | | | |
| 2. Mi evelop the in hazar | 2.2 Ado | 2.2.3 | Discourage road building on dams. Overflow from dam should not pass over road surface | DF | X | х | | | | | | | | | |
| Ŏ | 7 | 2.2.4 | Limit construction and development in known subsidence/sinkhole areas | SK | | Х | | | | | | | | | \Box |
| 9 v | | 3.1.1 | Mitigate the effects of flooding on public infrastructure. | FL | Х | Х | | | | | | Х | | | |
| cost effectiv protect live isdictions. | ble assets. | 3.1.2 | Brace/reinforce items within critical infrastructure Brace high value equipment Brace equipment that could fall causing injury or block evacuation routes | EQ EQ EQ | X | x | x | X | X | x | X | x | | | |
| olement rams to unty jur | d valual | 3.1.3 | Encourage the bracing of high value equipment such as furnaces, water heaters, and above ground tanks. | EQ, W, T | х | Х | | X | X | | | х | | | |
| Mitigation Programs - Implement cost effective and feasible mitigation programs to protect lives and property of Cole County jurisdictions. | Protect buildings and valuable assets. | 3.1.4 | Provide backup power to all critical infrastructure such as police, fire, hospitals, local government buildings, and designated shelters. | EQ, HT, WW, WF, WST, | X | Х | х | X | х | х | X | x | | | |
| . Mitiga ind feas and p | 3.1 Р | 3.1.5 | Encourage removal of vegetation and combustible materials around homes, businesses, and critical infrastructure. | WF | х | х | х | х | х | х | x | х | | | |
| .3. ar | | 3.1.6 | Evaluate access problems to critical infrastructure in the event of a flood. | FL | X | X | X | X | X | X | X | X | | | |

| Figure 4.3.13 f | | | Overview of Mitigation Actions by Hazard and Jurisdic | ction | | | | | | | | | | | |
|---|------------------------|----------|---|---|--------|----|--------|--------------|-------------|------------|------|------------|-------------|------------|-----------|
| Goal | Objective | Action # | MITIGATION ACTIONS | Hazards Addressed | County | ၁၄ | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-V | JC Schools | Lincoln U |
| cost effective protect lives sdictions. | | 3.2.1 | Continue to alert the public of hazardous weather via early warning sirens/electronic notification system or establish a mass notification system where needed. | WST, T | X | X | X | X | Х | X | X | X | | | X |
| - Implement cost or programs to prote e | e populations | 3.2.2 | Ensure that school buses have two way radio communications that meet or exceed FCC requirements. | FL, WW, WST, T | | | | | | | | | X | x | |
| ıs - Imp ın prog | nerable | 3.2.3 | Ensure evacuation routes are adequate in the event of a major hazard. If needed, pursue methods for improving capacity. | FL | х | Х | Х | X | х | X | х | х | | | |
| 3. Mitigation Programs - Implement cost effec and feasible mitigation programs to protect li and property of Cole County jurisdictions. | 3.2 Protect vulnerable | 3.2.4 | Establish formal agreements with appropriate shelter locations throughout Cole County | EQ, HT, FL, WW, WST, T, HST | х | х | х | x | х | X | X | x | | | |

| Figure 4.3.13 g | l | | Overview of Mitigation Actions by Hazard and Jurisdi | iction | | | | | | | | | | | |
|---|---------------------------------|----------|---|---------------------------|--------|----|--------|--------------|-------------|------------|------|------------|-------------|------------|-----------|
| Goal | Objective | Action # | MITIGATION ACTIONS | Hazards Addressed | County | ၁၄ | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-V | JC Schools | Lincoln U |
| st effective and ect lives and ictions. | tions. | 3.2.5 | Encourage development of formal agreements with shelters that have alternative heating sources Identify vulnerable populations needing potential relocation to shelter in event of power outage Identify potential transportation | ww | X | X | X | X | X | X | X | X | | | |
| ation Programs - Implement cost effecti ble mitigation programs to protect lives property of Cole County jurisdictions. | Protect vulnerable populations. | | Establish and maintain a system of temporary alternative placement sites ("safe houses") for emergency evacuation and shelter of school populations. | EQ, HT, WF, WST, | | х | | Х | | | | Х | X | х | X |
| | otect v | 3.2.7 | Encourage camping and RV facilities and mobile home parks to have saferooms on the premises. | W, T, HST | X | х | | х | | | | | | | |
| Mitigation Progran feasible mitigation property of C | 3.2 Pr | 3.2.8 | Encourage the construction of tornado safe rooms. | WST, T | X | Х | | Х | X | | | х | X | X | |
| 3. Mitigation feasible mi prop | | 3.2.9 | Assist owners of regulated high hazard dams with development of the Emergency Action Plans (EAPs) required in conjunction with the inundation studies being conducted. | DF | X | X | | | | | X | | | | |

| Figure 4.3.13 h | | | Overview of Mitigation Actions by Hazard and Jurisdic | ction | | | | | | _ | | | | | |
|--|-----------|----------|--|--|--------|----|--------|--------------|-------------|------------|------|------------|-------------|------------|--|
| Goal | Objective | Action # | MITIGATION ACTIONS | Hazards Addressed | County |)C | Lohman | Russellville | St. Martins | St. Thomas | Taos | Wardsville | Cole Co R-V | JC Schools | |
| Public Awareness - Increase public awareness of natural hazards in order to make the public a greater partner in hazard mitigation planning. | | 4.0.1 | Develop public education hazard awareness program. | DF, DR, EQ, HT, FL, SK, LF, WW, WF, WND, T, HST | X | X | X | х | X | X | X | X | | | |
| Awaı zards | | 4.0.2 | Establish flood warning signs at known flooding locations. | FL | X | X | | | | | Х | х | | | |
| ublic ral ha | | 4.0.3 | Establish educational materials for public regarding potential problems an earthquake in Missouri could cause. | EQ | X | x | х | X | X | x | x | x | | | |
| 4. P | | 4.0.4 | Encourage schools to include earthquake safety programs in with other emergency preparedness training | EQ | Х | x | х | х | х | х | x | х | | | |
| eness - rareness in order a greater | 9 | 4.0.5 | Provide public education materials before storm events to inform people of the danger of icy roads Have emergency supplies available at homes | ww | Х | х | Х | X | X | X | x | x | | | |
| 4. Public Awareness - Increase public awareness of natural hazards in order to make the public a greater partner in hazard mitigation | planning. | 4.0.6 | Encourage safe driving through public education campaigns, websites, and community events. | ww | | х | | X | | | | x | | | |
| 4. Pul Increase of naturato make t | | 4.0.7 | Provide education to homeowners living near large fuel areas on what they can do to minimize risk (forest, grasslands, etc.) | WF | X | X | X | X | X | X | X | X | | | |

| Figure 4.3.13 i | | | Overview of Mitigation Actions by Hazard and Jurisdic | ction | | | | | | | | | | | |
|--|-----------|----------|--|----------------------|--------|---|--------|--------------|---|------------|------|------------|-------------|------------|-----------|
| Goal | Objective | Action # | MITIGATION ACTIONS | Hazards Addressed | County | C | Lohman | Russellville | | St. Thomas | Taos | Wardsville | Cole Co R-V | JC Schools | Lincoln U |
| hazard- ions of | | 5.0.1 | Acquire destroyed or substantially damaged properties and relocate people voluntarily. | FL | X | X | | | | | | X | | | |
| te h | | 5.0.2 | Acquire properties in repetitively flooded areas involuntarily. | FL | X | X | | | | | | | | | |
| Future Development - Promote haza proof development in the jurisidictions Cole County. | | 5.0.3 | Adopt procedures for review of subdivision plans that minimize flood problems Encourage developer to include adequate storm water retention facilities on new builds Establish lowest floor elevation for new construction at 1' above Base Flood Elevation (BFE). | FL | | | | X | X | | | X | | | |
| De Go | | 5.0.4 | Require developers to build in accordance with locally accepted codes. | EQ | X | X | X | X | X | X | X | X | | | |
| Future oof dev | | 5.0.5 | Encourage the retrofitting of structures to new earthquake safety standards when undergoing renovations/improvements. | EQ | | X | X | X | X | X | X | X | | | |
| 5. prc | | 5.0.6 | Maintain resources for public on retrofitting and protection techniques | FL | X | X | X | X | X | X | X | X | | | 1 |

| Requirement $\$201.6(c)(3)(ii)$: | [The mitigation strategy] must also address the jurisdiction's participation in the National Flood Insurance program (NFIP), and continued compliance with NFIP requirements, as appropriate. |
|-----------------------------------|---|
|-----------------------------------|---|

Details of NFIP participation and flood mapping have been included in the Flood Profile in Section 3 (see Figures 3.5.5-3.5.6). The NFIP participation statuses of jurisdictions is shown again in Figure 4.3.14, along with the reasons that jurisdictions are not participating. It should be noted that three of the five jurisdictions currently not participating in the NFIP are revisiting the possibility of participation.

| Figure 4.3.14 | | | | | | | | | |
|---------------------|--|--|--|--|--|--|--|--|--|
| | Jurisdictions Participating in NFIP | | | | | | | | |
| | Cole County | | | | | | | | |
| | Jefferson City | | | | | | | | |
| | Wardsville | | | | | | | | |
| | Jurisdictions Not Participating in NFIP | | | | | | | | |
| Lohman | Lohman has not participated in the NFIP in the past because flooding has not been a problem. However, the city is currently looking into participation and has had a SEMA representative come to discuss NFIP participation with them. | | | | | | | | |
| Russellville | The City Council chooses not to participate in the NFIP because Russellville is not in a floodplain. | | | | | | | | |
| St. Martins | St. Martins has not participated in the NFIP in the past as there were no particular flooding issues. With a recent annexation, however, the city is going to be revisiting the possibility of NFIP participation. | | | | | | | | |
| St. Thomas | St. Thomas chooses not to participate in the NFIP because it is located high on a hill and doesn't have any flooding problems. | | | | | | | | |
| 1 St Thomac | | | | | | | | | |
| Source: Community S | urveys | | | | | | | | |

The jurisdictions of Cole County, Jefferson City, and Wardsville participate in the NFIP. The following mitigation actions pertain to continued compliance with the NFIP; the participating jurisdictions to which each action applies is listed after the action.

- 1.1.1 Revise and update regulatory floodplain maps. (County, Jefferson City, Wardsville)
- 1.1.5 Ensure that public facilities proposed for floodplain will comply with the National Flood Insurance Program (NFIP). (County, Jefferson City)

- 1.1.6 Ensure public facilities have adequate road access above the floodplain on arterial and collector streets. (County, Jefferson City)
- 2.1.1 Review and update flood damage prevention ordinance to ensure maximum protection from flood hazard events. (County, Jefferson City, Wardsville)
 - Consider adopting temporary moratorium on building in flood hazard areas until ordinance is revised. (County, Jefferson City, Wardsville)
 - Advise/assist property owners in retrofitting their homes and businesses to better respond to floods. (County, Jefferson City, Wardsville)
- 2.1.2 Continue to enforce flood damage prevention/floodplain management ordinances in compliance with NFIP requirements. (County, Jefferson City, Wardsville)
- 3.1.1 Mitigate the effects of flooding on public infrastructure. (County, Jefferson City, Wardsville)

4.4 Prioritization, Implementation, and Administration

| Requirement §201.6(c)(3)(iii): | [The mitigation strategy section shall include] an action plan describing how the actions identified in section (c) (3) (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 benefit review of the proposed projects and their associated costs. |
|-----------------------------------|--|
| Requirement $\$201.6(c)(3)(iv)$: | For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan. |

4.4.1 Prioritization of Actions using STAPLEE and Benefit/Cost Reviews

After the comprehensive list of mitigation actions for the entire Planning Area had been developed, the Technical Steering Committee carried out a STAPLEE review and Benefit/Cost review on the actions. The following guidelines were used:

STAPLEE Review

The questions below were used as starting points for evaluating each action according to the STAPLEE criteria. Scoring:

3 = Definitely YES

2 = Maybe YES

1 = Probably NO

0 = Definitely NO

- **Social**: Is the action socially acceptable to the community?
- **Technical**: Will the proposed strategy work? Will the action independently solve the problem?
- **Administrative**: Is there someone to coordinate and lead the effort?
- **Political**: Is the action politically acceptable? Is there public support both to implement and to maintain the project?
- **Legal**: Is there legal authority to implement the action?
- **Economic**: Will the action benefit the area economically? Does the cost seem reasonable for the size of the problem and the likely benefits?
- **Environmental**: Is the action consistent with local, state, and federal environmental laws and regulations? Will the project have a positive impact on the environment? Will historic structures be saved or protected?

Benefit/Cost Review

Benefit

Two (2) points were added for each of the following *avoided* damages (8 points maximum = highest benefit)

- Injuries and/or casualties
- Property damages
- Loss-of-function/displacement impacts
- Emergency management costs/community costs

Cost

Points were subtracted according to the following cost scale (-5 points maximum = highest cost)

- (-1) = Minimal little cost to the jurisdiction involved
- (-3) = Moderate definite cost involved but could likely be worked into operating budget
- (-5) = Significant cost above and beyond most operating budgets; would require extra appropriations to finance or to meet matching funds for a grant

Total Score

The scores for the STAPLEE Review and Benefit/Cost Review were added to determine a Total Score for each action.

Priority Scale

To achieve an understanding of how a Total Score might be translated into a Priority Rating, a sample matrix was filled out for the possible range of ratings an action might receive on both the STAPLEE and Benefit/Cost Review (see Appendix K). The possible ratings tested ranged between:

- A hypothetical action with "Half probably NO and half maybe YES" answers on STAPLEE (i.e. poor STAPLEE score) and Low Benefit/High Cost: Total Score = 7
- A hypothetical action with "All definitely YES" on STAPLEE and High Benefit/Little Cost: Total Score = 28

An inspection of the possible scores within this range led to the development of the following Priority Scale based on the Total Score in the STAPLEE-Benefit/Cost Review process:

```
20-28 points = High Priority
14-19 points = Medium Priority
13 points and below = Low Priority
```

The STAPLEE Review, Benefit/Cost Review, and Final Priority for each of the mitigation actions is shown in Figure 4.4.1a-d. It should be noted that most of the actions attained a high priority rating; this is reflective of the fact that many actions which would have scored poorly on the STAPLEE review were deleted for the update during the initial discussion/review of the actions in the original plan (see Section 4.2). Also, many of the actions are ongoing and already in place but remain high priorities in the work plans of the jurisdictions.

| Figure 4.4.1a | | | STAPLEE Review, Benefit/Cost Review, and Prioritization of Mitigation Act | ion | s | | | | | | | | | | | |
|---|-------------------------------------|-----------|--|-----|---|---|---|---|---|---|------------------|---------|------|-----------|-------|----------|
| Goal | Objective | Action # | MITIGATION ACTIONS | s | Т | Α | Р | L | E | E | STAPLEE Total | Benefit | Cost | B/C Total | TOTAL | PRIORITY |
| | | 1.1.1 | Revise and update regulatory floodplain maps | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 19 | 8 | -3 | 5 | 24 | Н |
| the | | 1.1.2 | Encourage participation in the National Flood Insurance Program (NFIP). | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 19 | 8 | -3 | 5 | 24 | H |
| ıghout | ınity. | 1.1.3 | Encourage participation in Community Rating System of National Flood Insurance Program (NFIP). | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 19 | 8 | -5 | 3 | 22 | Н |
| s throu | community. | 1.1.4 | Set up centralized, coordinated permitting process to ensure compliance with floodplain regulations. | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 20 | 8 | -1 | 7 | 27 | Н |
| hazard eration | into the | 1.1.5 | Ensure that public facilities proposed for floodplain will comply with the National Flood Insurance Program (NFIP). | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 20 | 8 | -5 | 3 | 23 | н |
| natural :e coop | procedures into the | 1.1.6 | Ensure public facilities have adequate road access above the floodplain on arterial and collector streets. | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 20 | 8 | -5 | 3 | 23 | Н |
| future d privat | | 1.1.7 | Continue development of storm water programs and ensure adequate maintenance of drainage systems | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 20 | 8 | -5 | 3 | 23 | н |
| ects of | Incorporate mitigation planning and | 1.1.8 | Review and update school plans on an annual basis to ensure that they adequately address all potential threats from natural hazards. | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 20 | 8 | -3 | 5 | 25 | Н |
| eff b on | pla | 1.1.9 | Have alternate power supplies for fueling emergency vehicles | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 21 | | -5 | 3 | 24 | H |
| gate | ition | 1.1.10 | Encourage fire and water districts to have alternate power supplies. | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 21 | 8 | -5 | 3 | 24 | H |
| g - Miti nty thro | e mitiga | 1.1.11 | Encourage all water providers to install electric transfer switches and/or backup generators. | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 21 | 8 | -5 | 3 | 24 | Н |
| lannin Cour | orporate | 1.1.12 | Encourage public and private water providers to develop distribution systems so that they interconnect with established distribution systems. | 3 | 1 | 3 | 3 | 3 | 3 | 3 | 19 | 8 | -5 | 3 | 22 | Н |
| Mitigation Planning - Mitigate effects of future natural hazards throughout the County through public and private cooperation. | 1.1 Ince | 1 1 1 1 3 | Encourage appropriate County and City staff to continually update their knowledge base regarding earthquake safety. | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 20 | 8 | -3 | 5 | 25 | Н |
| 1. Mitig | | 1.1.14 | Ensure the ability to respond to a severe winter weather event through advance preparation of maintenance areas and acquisition of stocks of chemicals and fuel appropriate for the length of a typical event. | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 21 | 8 | -3 | 5 | 26 | Н |

| Figure 4.4.1b | | | STAPLEE Review, Benefit/Cost Review, and Prioritization of Mitigation Act | ions | . | | | | | | | | | | |
|--|---|----------|---|------|----------|---|---|-----|-----|------------------|---------|------|-----------|-------|----------|
| Goal | Objective | Action # | MITIGATION ACTIONS | s | т | A | Р | L | EE | STAPLEE Total | Benefit | Cost | B/C Total | TOTAL | PRIORITY |
| Mitigation Planning - Mitigate effects of future natural hazards throughout the County through public and private cooperation. | Encourage private involvement in mitigation activities. | | Encourage local hotels/motels to provide their customers with high wind/tornado information including location and directions to local shelters, directions, and where to go in the hotel in the event of a disaster. | 3 | 2 | 3 | 3 | 3 | 3 3 | 20 | 4 | -1 | 3 | 23 | Н |
| itiga nrou and | rolve ies. | | Encourage utility companies to continue to maintain power line right of way | 3 | 2 | | _ | 3 | _ | | 8 | -3 | 5 | 25 | Н |
| - Mi ds th | ate involv activities. | 1.2.2 | · Provide public education regarding the best tree species to plant near utility lines | 3 | 2 | | - | 3 3 | _ | | 2 | -1 | 1 | 21 | H |
| ing zard pub | ivato n ac | | · When possible, utilize underground lines | 3 | 2 | 3 | 3 | 3 3 | 3 3 | 20 | 8 | -5 | 3 | 23 | Н |
| Mitigation Planning uture natural hazard County through pub cooperati | urage priv mitigation | 1.2.3 | Encourage cooperative agreements between utility companies to help restore infrastructure post-event. | 3 | 2 | 3 | 3 | 3 | 3 3 | 20 | 8 | -3 | 5 | 25 | Н |
| tion natu / th | Cou | 1.2.4 | Encourage purchase of drought insurance for agricultural community | 2 | 2 | 2 | 3 | 2 | 3 3 | 17 | 2 | -3 | -1 | 16 | M |
| tiga unt | | 1.2.5 | Encourage property owners to purchase earthquake insurance | 3 | 2 | 2 | 3 | 3 | 3 3 | 19 | 2 | -3 | -1 | 18 | M |
| 1. Mis of futu Co | 1.2 | 1.2.6 | Encourage owners of homes and businesses to consider the use of fire resistant shingles in new construction and re-roofing projects. | 2 | 2 | 2 | 3 | 2 | 2 3 | 16 | 6 | -3 | 3 | 19 | M |
| ct of | Pass appropriate ordinances for mitigation efforts. | | Review and update flood damage prevention ordinance to ensure maximum protection from flood hazard events | 3 | 3 | 3 | 3 | 3 3 | 3 3 | 21 | 8 | -3 | 5 | 26 | Н |
| e impa | for mi | 2.1.1 | · Consider adopting temporary moratorium on building in flood hazard areas until ordinance is revised. | 1 | 2 | 3 | 1 | 3 2 | 2 2 | 14 | 8 | -3 | 5 | 19 | M |
| imit th | inances S. | | · Advise/assist property owners in retrofitting their homes and businesses to better respond to floods. | 3 | 2 | 3 | 3 | 3 | 3 3 | 20 | 8 | -5 | 3 | 23 | Н |
| s that I | ate ordin efforts. | 2.1.2 | Continue to enforce flood damage prevention/floodplain management ordinances in compliance with NFIP requirements. | 2 | 2 | 3 | 2 | 3 3 | 3 3 | 18 | 8 | -3 | 5 | 23 | Н |
| policie lives | ıppropri | 2.1.3 | Consider adopting temporary moratorium on building in flood hazard areas until participation in NFIP is finalized. | 2 | 2 | 2 | 2 | 3 | 1 2 | 14 | 8 | -1 | 7 | 21 | Н |
| dola S of | e ssi | 2.1.4 | Maintain bridge and culvert standards to prevent debris from clogging waterways | 3 | 3 | 3 | 3 | 3 3 | 3 3 | 21 | 8 | -3 | 5 | 26 | Н |
| eve ard | | 2.1.5 | Add sinkhole regulations to stream buffer/storm water ordinance. | 2 | 2 | 2 | 2 | 2 | 2 2 | 14 | 8 | -1 | 7 | 21 | Н |
| / - C haz | 2.1 | | Adopt regulations that preserve riparian corridors in developments | 2 | 2 | 2 | 2 | 2 | 2 2 | 14 | 4 | -1 | 3 | 17 | M |
| Mitigation Policy - Develop policies that limit the impact of natural hazards on lives and property. | codes ds. | 2.2.1 | Adopt and enforce appropriate model building codes and national engineering standards. | 3 | 3 | 3 | 3 | 3 3 | 3 3 | 21 | 8 | -3 | 5 | 26 | Н |
| tio - | Adopt new co ind standards. | 2.2.2 | Encourage appropriate land use development downstream from dams. | 2 | 2 | 2 | 2 | 2 | 1 2 | 13 | 8 | -1 | 7 | 20 | Н |
| itiga | opt | | Discourage road building on dams. | 2 | 2 | 2 | 2 | 2 | 1 2 | 13 | 8 | -1 | 7 | 20 | Н |
| | Ad | 2.2.3 | Overflow from dam should not pass over road surface | 2 | 2 | 2 | 2 | 2 | 1 2 | 13 | 8 | -3 | 5 | 18 | M |
| 2. | 2.2 | 2.2.4 | Limit construction and development in known subsidence/sinkhole areas | 2 | 2 | 2 | 2 | 2 | 1 2 | 13 | 8 | -3 | 5 | 18 | M |

| Figure 4.4.1c | | | STAPLEE Review, Benefit/Cost Review, and Prioritization of Mitigation Ac | tion | • | | | | | | | | | | |
|--|---------------------------|----------|--|------|---|---|---|---|-----|--------------|--------|------|-----------|-------|----------|
| Goal | Objective | Action # | MITIGATION ACTIONS | s | Т | Α | Р | L | E | STAPLEE | l otal | Cost | B/C Total | TOTAL | PRIORITY |
| y to | σ. | 3.1.1 | Mitigate the effects of flooding on public infrastructure. | 3 | 2 | 3 | 3 | 3 | 3 3 | 3 20 | | 3 -5 | 5 3 | 23 | Н |
| t cos rams ount | and valuable | | Brace/reinforce items within critical infrastructure. | 3 | 2 | 3 | 3 | 3 | 3 3 | 3 20 | | 3 -5 | 5 3 | 23 | Н |
| rogr ole C | valu | 3.1.2 | · Brace high value equipment. | 3 | 2 | 3 | 3 | 3 | 3 3 | 3 20 | | 3 -5 | 5 3 | 23 | Н |
| mple ion p | and | | Brace equipment that could fall causing injury or block evacuation routes. | 3 | 2 | 3 | 3 | 3 | 3 3 | 3 20 | | 3 -5 | 5 3 | 23 | Н |
| Programs - In isible mitigat and property gurisdictions | | 3.1.3 | Encourage the bracing of high value equipment such as furnaces, water heaters, and above ground tanks | 3 | 2 | 3 | 3 | 3 | 3 3 | 3 20 | | 3 -5 | 5 3 | 23 | н |
| 3. Mitigation Programs - Implement cost effective and feasible mitigation programs to protect lives and property of Cole County jurisdictions. | Protect buildings assets. | 3.1.4 | Provide backup power to all critical infrastructure such as police, fire, hospitals, local government buildings, and designated shelters. | 3 | 2 | 3 | 3 | 3 | 3 3 | 3 20 | | 3 -5 | 5 3 | 23 | н |
| 3. Mitiga fective an protect liv | 3.1 Pro | 3.1.5 | Encourage removal of vegetation and combustible materials around homes, businesses, and critical infrastructure. | 2 | 3 | 2 | 3 | 3 | 3 3 | 3 19 | | 3 -1 | 1 7 | 26 | н |
| effe Pi | | 3.1.6 | Evaluate access problems to critical infrastructure in the event of a flood. | 3 | 3 | 3 | 3 | 3 | 3 3 | 3 2 1 | 8 | 3 -3 | 3 5 | 26 | Н |
| ble | | 3.2.1 | Continue to alert the public of hazardous weather via early warning sirens/electronic notification system or establish a mass notification system where needed. | 3 | 3 | 3 | 3 | 3 | 3 3 | 3 21 | 8 | 3 -5 | 5 3 | 24 | Н |
| d feasil ole Cοι | | 3.2.2 | Ensure that school buses have two way radio communications that meet or exceed FCC requirements. | 3 | 3 | 3 | 3 | 3 | 3 3 | 3 21 | 8 | 3 -5 | 5 3 | 24 | н |
| Mitigation Programs - Implement cost effective and feasible gation programs to protect lives and property of Cole Count, jurisdictions. | ns. | 3.2.3 | Ensure evacuation routes are adequate in the event of a major hazard. If needed, pursue methods for improving capacity. | 3 | 3 | 3 | 3 | 3 | 3 3 | 3 21 | 8 | 3 -5 | 5 3 | 24 | н |
| ffec | atio | 3.2.4 | Establish formal agreements with appropriate shelter locations throughout Cole County | 3 | 3 | 3 | 3 | 3 | 3 3 | 3 21 | | 3 -3 | 3 5 | 26 | Н |
| t cost e and pro ns. | e populations. | | Encourage development of formal agreements with shelters that have alternative heating sources. | 3 | 3 | 3 | 3 | 3 | 3 3 | 3 21 | 8 | 3 -3 | 3 5 | 26 | н |
| Implement co stect lives an jurisdictions | Protect vulnerable | 3.2.5 | · Identify vulnerable populations needing potential relocation to shelter in event of power outage | 3 | 3 | 3 | 3 | 3 | 3 3 | 3 21 | 8 | 3 -3 | 3 5 | 26 | н |
| Imp otec | ร ช | | · Identify potential transportation | 3 | 3 | 3 | 3 | 3 | 3 3 | 3 21 | 8 | 3 -3 | 3 5 | 26 | Н |
| rams - s to pr | | 3.2.6 | Establish and maintain a system of temporary alternative placement sites ("safe houses") for emergency evacuation and shelter of school populations. | 3 | 3 | 3 | 3 | 3 | 3 3 | 3 21 | 8 | 3 -3 | 3 5 | 26 | н |
| on Proç rogram | 3.2 | 3.2.7 | Encourage camping and RV facilities and mobile home parks to have saferooms on the premises. | 3 | 3 | 3 | 3 | 3 | 3 3 | 3 21 | 8 | 3 -5 | 5 3 | 24 | н |
| gatik on p | | 3.2.8 | Encourage the construction of tornado safe rooms. | 3 | 3 | 3 | 3 | 3 | 3 3 | 3 2 1 | 8 | 3 -5 | 5 3 | 24 | Н |
| 3. Mitigation Programs - Implement cost effective and feasible mitigation programs to protect lives and property of Cole County jurisdictions. | | 3.2.9 | Assist owners of regulated high hazard dams with development of the Emergency Action Plans (EAPs) required in conjunction with the inundation studies being conducted. | 3 | 3 | 3 | 3 | 3 | 3 3 | 3 21 | 8 | 3 -3 | 3 5 | 26 | н |

| Figure 4.4.1d | l | | STAPLEE Review, Benefit/Cost Review, and Prioritization of Mitigation Act | ions | 3 | | | | | | | | | | |
|--|--------------------------------|----------|--|------|---|---|----|-----|---|------------------|---------|----------|-----------|-------|----------|
| Goal | Objective | Action # | MITIGATION ACTIONS | s | Т | A | Р | LE | E | STAPLEE Total | Benefit | Cost | B/C Total | TOTAL | PRIORITY |
| 0 5 | | 4.0.1 | Develop public education hazard awareness program. | 3 | 3 | 3 | 3 | 3 3 | 3 | 21 | 8 | -3 | 5 | 26 | Н |
| blic er to | | 4.0.2 | Establish flood warning signs at known flooding locations. | 3 | 3 | 3 | 3 | 3 3 | 3 | 21 | 8 | -3 | 5 | 26 | H |
| Increase public zards in order to partner in haza | | 4.0.3 | Establish educational materials for public regarding potential problems an earthquake in Missouri could cause. | 3 | 3 | 3 | 3 | 3 3 | 3 | 21 | 8 | -3 | 5 | 26 | Н |
| - Increa azards | lanning | 4.0.4 | Encourage schools to include earthquake safety programs in with other emergency preparedness training | 3 | 3 | 3 | 3 | 3 3 | 3 | 21 | 8 | -3 | 5 | 26 | Н |
| 4. Public Awareness - Increase public awareness of natural hazards in order to make the public a greater partner in hazard | mitigation planning. | 4.0.5 | Provide public education materials before storm events to inform people of the danger of icy roads | 3 | 3 | 3 | 3 | 3 3 | 3 | 21 | 8 | -3 | 5 | 26 | Н |
| Awa of n | nitig | | Have emergency supplies available at homes | 3 | 3 | 3 | 3 | 3 3 | 3 | 21 | 8 | -3 | 5 | 26 | Н |
| Public / | | 4.0.6 | Encourage safe driving through public education campaigns, websites, and community events. | 3 | 3 | 3 | 3 | 3 3 | 3 | 21 | 8 | -3 | 5 | 26 | н |
| 4. awai make | | 4.0.7 | Provide education to homeowners living near large fuel areas on what they can do to minimize risk (forest, grasslands, etc.) | 3 | 3 | 3 | 3 | 3 3 | 3 | 21 | 8 | -3 | 5 | 26 | Н |
| | | 5.0.1 | Acquire destroyed or substantially damaged properties and relocate people voluntarily. | 2 | 3 | 3 | 2 | 3 3 | 3 | 19 | 8 | -5 | 3 | 22 | н |
| ote he | | | Acquire properties in repetitively flooded areas involuntarily. | 1 | 3 | 3 | -+ | 3 3 | + | | 8 | -5 -5 | 3 | 22 | H |
| - Promote | unty | 5.0.2 | Adopt procedures for review of subdivision plans that minimize flood problems | 3 | 3 | - | -+ | 3 3 | _ | 21 | 8 | -3 | 5 | 26 | Н |
| 5. Future Development - Promote hazard-proof development in the | jurisidictions of Cole County. | 5.0.3 | Encourage developer to include adequate storm water retention facilities on new builds | 2 | 3 | | 2 | | | 19 | 8 | -5 | 3 | 22 | Н |
| Future Development | ons of (| | · Establish lowest floor elevation for new construction at 1' above Base Flood Elevation (BFE). | 3 | 3 | 3 | 3 | 3 3 | 3 | 21 | 8 | -1 | 7 | 28 | Н |
| e D D O | dicti | 5.0.4 | Require developers to build in accordance with locally accepted codes. | 3 | 3 | 3 | 3 | 3 3 | 3 | 21 | 8 | -3 | 5 | 26 | Н |
| . Futur | jurisio | 5.0.5 | Encourage the retrofitting of structures to new earthquake safety standards when undergoing renovations/improvements. | 2 | 2 | 3 | 2 | 3 3 | 3 | 18 | 8 | -5 | 3 | 21 | Н |
| . ک | | 5.0.6 | Maintain resources for public on retrofitting and protection techniques. | 3 | 3 | 3 | 3 | 3 3 | 3 | 21 | 8 | -3 | 5 | 26 | Н |

4.4.2 - 4.4.12 Implementation and Administration in Participating Jurisdictions

After the Technical Steering Committee had finished the STAPLEE and Benefit/Cost Reviews and prioritized the mitigation actions, the actions specific to each participating jurisdiction were taken to the governing body, elected official(s), and/or person(s) in the jurisdiction with authority to review the actions and make plans for their implementation and administration. The Technical Steering Committee representative from each jurisdiction was responsible for ensuring that this review and planning took place.

The mitigation actions for each participating jurisdiction are shown in Figures 4.4.2-4.4.12 respectively. The implementation and administration of each action for each jurisdiction is included in these figures.

In some cases, the reviewers in a jurisdiction made a change to the expected cost of an action, given the specifics of their situation. In a few cases, the priority of an action was changed for a jurisdiction. These changes are explained immediately following the chart of the jurisdiction's actions.

Keys for the charts are shown below:

Hazard Key

DF – Dam Failure

DR – Drought

EQ – Earthquake

HT – Extreme Heat

FL – Flood

SK – Land Subsidence/Sinkhole

LF – Levee Failure

WW – Severe Winter Weather

WF - Wildfire

WND - Windstorm

T – Tornado

HST – Hailstorm

Cost Key

Minimal – little cost to the jurisdiction involved

Moderate – definite cost involved but could likely be worked into operating budget Significant – cost above and beyond most operating budgets; would require extra appropriations to finance or to meet matching funds for a grant

Benefit (Losses Avoided) Key

I/C - Injuries and/or casualties

PD - Property damages

LF - Loss-of-function/displacement impacts

EMCC - Emergency management costs/community costs

4.4.2 Cole County

| Figure | 4.4.2 a | | | Mitigation Actions for Cole C | ountv Governi | ment | | | | | |
|----------|---|----------------------|----------|--|--|-----------------------------------|---------------------------------|-------------------|---------------------------------|---------------------------------|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion |
| | Revise and update regulatory floodplain maps. | FL | Н | Present any future maps to County Commission for adoption. | SEMA, FEMA, MODNR | Cnty/JC Planning, EOD | Internal | Mod | I/C, PD,LF, EMCC | 2012 | Court order by County Commission accepting new maps. |
| 1.1.3 | Encourage participation in Community Rating System of National Flood Insurance Program (NFIP). | FL | Н | Staff will promote participation in community ratings program | CntyCom, local gov councils | | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Continuously review proposed building locations |
| 1.1.5 | Ensure that public facilities proposed for floodplain will comply with the National Flood Insurance Program (NFIP). | FL | Н | Staff review of all proposed public building locations. | Cnty/JC Public Works | CntyCom, local gov councils | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Continual review of proposed public building location. |
| 1116 | Ensure public facilities have adequate road access above the floodplain on arterial and collector streets. | FL | Н | Staff/engineer will review & prepare plans for potential conflict streets | Cnty/JC Public Works | CntyCom, local gov councils | Internal/Futur e Grants | Sig | I/C, PD,LF, EMCC | Ongoing | Roadways improved by standard. |
| | Continue development of storm water programs and ensure adequate maintenance of drainage systems. | FL | Н | Draft new regulations to comply with national storm water mandate requirements in defined urban areas. | Cnty/JC Public Works, local councils | | Internal | Sig | I/C, PD,LF, EMCC | 2013 | Regulations adopted. |

| Figure | 4.4.2 b | • | | Mitigation Actions for Cole Co | ounty Govern | ment | | | | | |
|----------|---|-----------------------------------|----------|---|------------------------------------|--|---------------------------------|-------------------|---------------------------------|---------------------------------|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion |
| 1.1.9 | Have alternate power supplies for fueling emergency vehicles. | EQ, HT, WW, WF, WST,T | Н | Cole County Public Works has installed a Generator Backup system for the entire complex. JC has a backup system in place. | ЕМС | Local police, sheriff, fire depts, ambulance districts | Local funding | Sig | I/C, PD,LF, EMCC | 2015 | Local review |
| | Encourage fire and water districts to have alternate power supplies. | EQ, HT, WW, WF, WST,T | Н | Continue to encourage water district to install alternate power supplies for water districts. American Water has a system and can supply water to other areas with placed valving systems to other districts if needed. | EMC | Fire and water districts | Private district funding | Sig | I/C, PD,LF, EMCC | 2015 | Local review |
| 1.1.11 | Encourage all water providers to install electric transfer switches and/or backup generators. | EQ, HT, WW, WF, WST, | Н | Adopt regulations encouraging transfer equipment/backup generators be provided by water providers. | CntyComm, local gov councils | Public and private water utilities. | Internal / Future Grants | Sig | I/C, PD,LF, EMCC | Ongoing | Acquire/install equipment were necessary. |
| 1.1.12 | Encourage public and private water providers to develop distribution systems so that they interconnect with established distribution systems. | DR, WF | Н | Draft resolutions encouraging future interconnects with established water systems, monitor for grant eligibility. | CntyCom, local gov council | Public and private water providers | Internal/Futur e Grants | Mod | I/C, PD,LF, EMCC | Ongoing | All possible and necessary connections are made. |
| 1.1.13 | Encourage appropriate County and City staff to continually update their knowledge base regarding earthquake safety. | EQ | Н | Staff will attend ongoing training in earthquake safety | CntyComm, local gov councils | Emerg Mgmt | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Certify appropriate staff as trained in earthquake safety. |

| Figure | 4.4.2 c | | | Mitigation Actions for Cole Co | ounty Governi | ment | | | | | |
|----------|--|----------------------|----------|---|---|--------------------------|---------------------------------|-------------------|---------------------------------|---------------------------------|---|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion |
| 1.1.14 | Ensure the ability to respond to a severe winter weather event through advance preparation of maintenance areas and acquisition of stocks of chemicals and fuel appropriate for the length of a typical event. | ww | Н | Public works staff shall acquire needed materials and prepare equipment in advance of inclement weather | Cnty Public Works, local gov councils | Private contractors | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Materials and equipment are stockpiled, checked, and readied in advance of inclement weather. |
| 1.2.1 | Encourage local hotels/motels to provide their customers with high wind/tornado information including location and directions to local shelters, directions, and where to go in the hotel in the event of a disaster. | WST, T | Н | Continue to provide emergency services information to local owners. Inspections can be done by Jefferson City Fire Dept. during normal inspections. Plans can be upgraded to ensure proper information is received. | EMC | Business associations | Local business | Min | I/C, PD | 2015 | local review/self inspectiosn |
| | Encourage utility companies to continue to maintain power line right of way. | WW, WST, T | Н | Staff will observe and report possible power line right of way that requires maintenance. | Cnty Public Works | Local utility companies | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Observable power line right of ways are reviewed. |
| 1.2.2 | · Provide public education regarding the best tree species to plant near utility lines. | WW, WST, T | Н | Staff will inform all building applicants of proper tree plantings in proximity to utility lines. | Cnty Public Works | Local utility companies | Internal | Min | PD | Ongoing | Properties are reviewed and building applicants are informed. |
| | · When possible, utilize underground lines. | WW, WST, T | Н | Staff will encourage underground service with building applicants and power providers. | Cnty Public Works | Local utility companies | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | All new services are reviewed. |
| 1.2.3 | Encourage cooperative agreements between utility companies to help restore infrastructure post-event. | WW, WST, T | Н | Electric Co-ops are part of the EOC/LEPC during a disaster. The LEOP of the Co-ops does include immediate actions taken to restore power to needed facilitites. | EMC | Local utility companies | Local funding | Mod | I/C, PD,LF, EMCC | 2015 | Local planning/self review |

| Figure | 4.4.2 d | | | Mitigation Actions for Cole Co | ounty Govern | ment | | | | | |
|----------|--|----------------------|----------|--|------------------------------------|--|---------------------------------|-------------------|---------------------------------|---------------------------------|---|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion |
| | Encourage purchase of drought insurance for agricultural community. | DR | М | Draft proclamation encouraging drought insurance for agricommunities. | CntyCom | USDA insurance agents, University Outreach & Extension | Internal | Mod | PD | 2012 | Review current properties for compliance. |
| 1.2.5 | Encourage property owners to purchase earthquake insurance. | EQ | M | Draft proclamation encouraging earthquake insurance for property owners. | CntyComm, local gov councils | Realtors, Insurance companies | Internal | Mod | PD | Ongoing | Inform property owners. |
| | Encourage owners of homes and businesses to consider the use of fire resistant shingles in new construction and re-roofing projects. | WF | M | Draft/provide information to be distributed to home and business owners, as well as building applicants, in regard to fire resistant roofing. | JC/Cnty Planning | Local contractors, home improvement stores | Internal | Mod | I/C, PD,LF | Ongoing | Recommend resistant materials to building applicants. |
| | Review and update flood damage prevention ordinance to ensure maximum protection from flood hazard events. | FL | Н | Staff will monitor & propose any necessary ordinance updates. | Cnty/JC Planning | CntyCom, JC Council | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | All codes are reviewed & updated as necessary. |
| 2.1.1 | Consider adopting temporary moratorium on building in flood hazard areas until ordinance is revised. | FL | M | Staff will prepare floodplain temporary moratorium regulations for adoption | Cnty/JC Planning | CntyCom, JC Council | Internal | Mod | I/C, PD,LF, EMCC | 2013 | Review and adoption of proposed legislations |
| | Advise/assist property owners in retrofitting their homes and businesses to better respond to floods. | FL | Н | Staff will provide information for home & business owners for retrofitting structures | Cnty/JC Planning | CntyCom, JC Council | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Review current regulations and materials for retrofitting. |
| | Continue to enforce flood damage prevention/floodplain management ordinances in compliance with NFIP requirements. | FL, LF | Н | Staff will monitor floodplain areas for non compliance | Cnty/Local councils | | Internal/FEM A grants | Mod | I/C, PD,LF, EMCC | Ongoing | Review and update flood regulations as necessary. |
| 2.1.4 | Maintain bridge and culvert standards to prevent debris from clogging waterways. | FL | Н | Staff is in process of reviewing standards for prevention and continued/ongoing maintenance/removal if necessary. | Cnty/Local councils | | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Continually inspect all applicable bridges and culverts. |

| Figure | 4.4.2 e | | | Mitigation Actions for Cole Co | ounty Govern | ment | | | | | |
|----------|--|---------------------------------|----------|---|---|---|---------------------------------|-------------------|---------------------------------|---------------------------------|---|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion |
| 2.2.1 | Adopt and enforce appropriate model building codes and national engineering standards. | EQ, WF, WST, T, HST | Н | Staff will propose for adoption new codes as necessary | CntyCom, local gov councils | Local contractors | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Adopt appropriate codes as recommended |
| 2.2.2 | Encourage appropriate land use development downstream from dams. | DF | Н | Staff will monitor current land uses as necessary | CntyCom, local gov councils | JC Public Works | Internal | Min | I/C, PD,LF, EMCC | Ongoing | Monitor land downstream of major dams |
| 2.2.3 | Discourage road building on dams. | DF | Н | Staff will propose/draft/adopt regulations discouraging roadways where not appropriate on major dams. | CntyCom, local gov councils | Cnty and local gov public works | Internal | Min | I/C, PD,LF, EMCC | 2013 | Adoption of new regulations |
| | Overflow from dam should not pass over road surface. | DF | M | Staff will draft and propose appropriate overflow regulations | CntyCom, local gov councils | Cnty and local gov public works | Internal | Mod | I/C, PD,LF, EMCC | 2013 | Adoption of new regulations |
| 3.1.1 | Mitigate the effects of flooding on public infrastructure. | FL | Н | Staff will inspect & monitor infrastructure for possible future flooding problems. | CntyCom, local councils | FEMA/SEMA | Internal/Grant s | Sig | I/C, PD,LF, EMCC | Ongoing | Continually inspect infrastructure |
| | Brace/reinforce items within critical infrastructure. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations |
| 3.1.2 | · Brace high value equipment. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations |
| | Brace equipment that could fall causing injury or block evacuation routes. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations |
| 3.1.3 | Encourage the bracing of high value equipment such as furnaces, water heaters, and above ground tanks. | EQ, W, | Н | Staff will prepare information for the public encouraging bracing of value equipment | Cnty/local municipal public works | Home- and business- owners | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Inform public of necessary benefits |

| Figure | 4.4.2 f | | | Mitigation Actions for Cole C | ounty Govern | ment | | | | | |
|----------|---|---|----------|--|---|--|---------------------------------|-------------------|---------------------------------|---------------------------------|---|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion |
| 3.1.4 | Provide backup power to all critical infrastructure such as police, fire, hospitals, local government buildings, and designated shelters. | EQ, HT, WW, WF, WST, | Н | Cole County has purchased a large portable generator for backup to some facilities. JCPD has a backup system in place, CCSO as well. Continue to ask shelter sites to provide backup or transfer switches. | EMC | Mass Care Coodinator;Re d Cross | City/County Gov'ts | Sig | I/C, PD,LF, EMCC | 2015 | Local review |
| 3.1.5 | Encourage removal of vegetation and combustible materials around homes, businesses, and critical infrastructure. | WF | Н | Staff will prepare information to educate the public in regard to removal of combustible materials | Cnty/JC Public Works | Fire districts and departments | Internal | Min | I/C, PD,LF, EMCC | Ongoing | Inform the public of benefits of removal of unnecessary materials |
| 3.1.6 | Evaluate access problems to critical infrastructure in the event of a flood. | FL | Н | Continue to work with County/City public works. | Emerg Mgmt | CntyCom, local gov councils | Local | Mod | I/C, PD,LF, EMCC | 2015 | LEOP |
| 3.2.1 | Continue to alert the public of hazardous weather via early warning sirens/electronic notification system or establish a mass notification system where needed. | WST, T | Н | Continue to upgrade equipment and emergency notifications. | JC Police Chief, Lincoln U Police Dept. | EMD, Cnty Sheriff, Fire Chiefs, Cnty PW Dir, Capitol Region EMS | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Public is notified in advance of hazardous weather |
| 3.2.3 | Ensure evacuation routes are adequate in the event of a major hazard. If needed, pursue methods for improving capacity. | FL | Н | Continue to work with County/City public works. | EMC | Public Works (County, JC) | Local | Sig | I/C, PD,LF, EMCC | 2015 | LEOP |
| 3.2.4 | Establish formal agreements with appropriate shelter locations throughout Cole County. | EQ, HT, FL, WW, WST, T, HST | Н | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | EMC | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review |

| Figure | 4.4.2 g | | | Mitigation Actions for Cole C | ounty Govern | ment | | | | | |
|----------|--|----------------------|----------|--|--|--|-----------------------------------|-------------------|---------------------------------|---------------------------------|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion |
| | Encourage development of formal agreements with shelters that have alternative heating sources. | | | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review |
| 3.2.5 | Identify vulnerable populations needing potential relocation to shelter in event of power outage. | WW | Н | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | EMC | American Red Cross/ County Health Dept. | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review |
| | · Identify potential transportation. | | | Ensure transportation with JC Jefftran and local school bus vendors. | | American Red Cross/ Jefferson City Community Development | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review/LEOP |
| 3.2.7 | Encourage camping and RV facilities and mobile home parks to have safe rooms on the premises. | W, T, HST | Н | Staff will prepare recommendations for all potentially affected facilities to construct safe rooms | CntyCom, local gov councils | Cnty/JC Planning | Internal/FEM A /SEMA grants | Sig | I/C, PD,LF, EMCC | Ongoing | Staff will distribute recommendations to potentially affected facilities |
| 3.2.8 | Encourage the construction of tornado safe rooms. | WST, T | Н | Staff will prepare information for the proper construction of tornado safe rooms | CntyCom, local councils, school district/Lincoln U admin | | Internal | Sig | I/C, PD,LF, EMCC | 2013 | Staff will advise all new building applicants of applicable potentials |
| 3.2.9 | Assist owners of regulated high hazard dams with development of the Emergency Action Plans (EAPs) required in conjunction with the inundation studies being conducted. | DF | Н | Continue to work with Department of Natural Resources, engineers and state regulations. | Dam owners | EMC | Local owners | Mod | I/C, PD,LF, EMCC | 2015 | Completed plans |

| Figure | Figure 4.4.2 h | | | | | | | | | | | |
|----------|---|--|----------|--|---|---|---------------------------------|-------------------|---------------------------------|---------------------------------|-------------------------------|--|
| | | | | Mitigation Actions for Cole Co | ounty Govern | ment | | | | - | - | |
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | |
| 4.0.1 | Develop public education hazard awareness program. | DF, DR, EQ, HT, FL, SK, LF, WW, WF, WND, T, HST | Н | Continue to provde updated emergency education messages to the public, schools neighborhood watch programs, etc. | Emer Mgmt | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | local review | |
| 4.0.2 | Establish flood warning signs at known flooding locations. | FL | Н | Monitor areas for ongoing and new potential road flooding hazards | Cnty Public Works, local gov councils | | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Post flood area warning signs | |
| 4.0.3 | Establish educational materials for public regarding potential problems an earthquake in Missouri could cause. | EQ | Н | Continue to provide updated materials through FEMA/SEMA. | EMC | Univ of MO Outreach and Extension | | Mod | I/C, PD,LF, EMCC | 2015 | local review | |
| 4.0.4 | Encourage schools to include earthquake safety programs in with other emergency preparedness training. | EQ | Н | Ensure schools include emergency messages and drills. | EMC | Local school districts | local | Mod | I/C, PD,LF, EMCC | 2015 | Local Review | |

| Figure | Figure 4.4.2 i Mitigation Actions for Cole County Government □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ | | | | | | | | | | | | | |
|----------|---|----------------------|----------|--|--|---|--|-------------------|---------------------------------|---------------------------------|---|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | | |
| | Provide public education materials before storm events to inform people of the danger of icy roads. | | Н | Continue to provide emergency messages through media contacts. | | 911 communciatio ns, County/City public works/ JCPD, CCSO | local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | | |
| 4.0.5 | Have emergency supplies available at homes. | WW | Н | Continue providing community emergency programs, CERT. | EMC | CERT Team (Community Emergency Response Team) Citizen Corps Coordinator | Local/Homela nd Security grant funding | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | | |
| 4.0.7 | Provide education to homeowners living near large fuel areas (forest, grasslands, etc.) on what they can do to minimize risk. | WF | Н | Cotinue to provide wildfire messages, burn ban announcements and statewide Firewise program. | EMC | Fire districts and departments | local | Mod | I/C, PD,LF, EMCC | 2015 | Local review/ FD education programs | | | |
| 5.0.1 | Acquire destroyed or substantially damaged properties and relocate people voluntarily. | FL | Н | Monitor damaged properties as necessary and apply for assistance where appropriate | Cnty/JC Planning/Local council | SEMA HMGP | SEMA/FEMA grants | Sig | I/C, PD,LF, EMCC | Ongoing | Acquire properties as needed | | | |
| 5.0.2 | Acquire properties in repetitively flooded areas involuntarily. | FL | Н | Monitor damaged properties as necessary and apply for assistance where appropriate | JC/Cnty Planning and Public Works, MOVOAD | | SEMA/FEMA grants | Sig | I/C, PD,LF, EMCC | Ongoing | Acquire properties as needed | | | |
| 5.0.4 | Require developers to build in accordance with locally accepted codes. | EQ | Н | Staff currently requires all building development to be built to adopted building codes. | Cnty/JC Public Works and Planning | Local contractors, CntyCom, local gov councils | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Inspect development/buildi ngs for current code compliance | | | |

| Figure | Figure 4.4.2 j Mitigation Actions for Cole County Government | | | | | | | | | | | | |
|----------|--|----------------------|----------|--|---|--|---------------------------------|-------------------|---------------------------------|---------------------------------|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| 5.0.5 | Encourage the retrofitting of structures to new earthquake safety standards when undergoing renovations/ improvements. | EQ | Н | Draft/prepare educational materials for public in regard to retrofitting | Cnty/JC Public Works and Planning | Local contractors, CntyCom, local gov councils | Internal/SEM A grants | Sig | I/C, PD,LF, EMCC | Ongoing | Distribute information to local centers of information/media outlets | | |
| 5.0.6 | Maintain resources for public on retrofitting and protection techniques. | FL | Н | Supply needed international Code requirements. | EMC | Cnty/local gov public works | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local adoptions of codes | | |

Changes:

1.1.12 The projected cost was changed from Significant to Moderate as this action is not expected to affect Cole County government in a major way.

4.4.3 Jefferson City

| Figure | Figure 4.4.3a Mitigation Actions for Jefferson City | | | | | | | | | | | | |
|----------|---|----------------------------------|----------|---|--|--|---------------------------------|-------------------|---------------------------------|---------------------------------|---|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| 1.1.1 | Revise and update regulatory floodplain maps. | FL | Н | Continue to review and update plan. | SEMA, FEMA, MODNR | Cnty/JC Planning, EOD | FEMA/City | Mod | I/C, PD,LF, EMCC | 2015 | Floodplain maps are revised and updated as necessary/possible. | | |
| 1.1.3 | Encourage participation in Community Rating System of National Flood Insurance Program (NFIP). | FL | Н | Continue to review and update plan. | CntyCom, local gov councils | | NA | Sig | I/C, PD,LF, EMCC | 2015 | Participation in CRS is considered. | | |
| 1.1.5 | Ensure that public facilities proposed for floodplain will comply with the National Flood Insurance Program (NFIP). | FL | Н | Continue to monitor public facilities. | Cnty/JC Public Works | CntyCom, local gov councils | City | Sig | I/C, PD,LF, EMCC | 2015 | Public facilities comply with NFIP. | | |
| 1.1.6 | Ensure public facilities have adequate road access above the floodplain on arterial and collector streets. | FL | Н | Continue to monitor public facilities. | Cnty/JC Public Works | CntyCom, local gov councils | City | Sig | I/C, PD,LF, EMCC | 2015 | Public facilities have adequate road access above the floodplain. | | |
| 1.1.7 | Continue development of storm water programs and ensure adequate maintenance of drainage systems. | FL | Н | Cooperatively develop programs and identify funding sources. | Cnty/JC Public Works, local councils | Cole County | City/County | Sig | I/C, PD,LF, EMCC | 2015 | Drainage systems are maintained and storm water programs further developed. | | |
| 1.1.9 | Have alternate power supplies for fueling emergency vehicles. | EQ, HT, WW, WF, WST, | Н | Cole County Public Works has installed a Generator Backup system for the entire complex. JC has a backup system in place. | ЕМС | Local police, sheriff, fire depts, ambulance districts | Local funding | Sig | I/C, PD,LF, EMCC | 2015 | Local review | | |

| Figure | Mitigation Actions for Jefferson City | | | | | | | | | | | | |
|----------|--|----------------------------------|----------|---|---|-------------------------------------|---------------------------------|-------------------|---------------------------------|---------------------------------|---|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| 1.1.11 | Encourage all water providers to install electric transfer switches and/or backup generators. | EQ, HT, WW, WF, WST, | Н | Continue to meet and encourage all providers to cooperate. | CntyComm, local gov councils | Public and private water utilities. | All entities involved | Sig | I/C, PD,LF, EMCC | 2015 | Increased use of transfer switches and/or backup generators. | | |
| 1.1.12 | Encourage public and private water providers to develop distribution systems so that they interconnect with established distribution systems. | DR, WF | Н | Continue to meet and encourage all providers to cooperate. | CntyCom, local gov council | Public and private water providers | All entities involved | Sig | I/C, PD,LF, EMCC | 2015 | Future development of water distribution systems interconnect with established distribution systems. | | |
| 1.1.13 | Encourage appropriate County and City staff to continually update their knowledge base regarding earthquake safety. | EQ | Н | Continue to meet and participate in appropriate training as available. | CntyComm, local gov councils | Emerg Mgmt | City/County | Mod | I/C, PD,LF, EMCC | 2015 | Appropriate staff have updated knowledge base regarding earthquake safety. | | |
| 1.1.14 | Ensure the ability to respond to a severe winter weather event through advance preparation of maintenance areas and acquisition of stocks of chemicals and fuel appropriate for the length of a typical event. | WW | Н | Continue to meet, review and update plan. | Cnty Public Works, local gov councils | Private contractors | City/County | Mod | I/C, PD,LF, EMCC | 2015 | Materials are available when needed for a severe winter weather event. | | |
| 1.2.1 | Encourage local hotels/motels to provide their customers with high wind/tornado information including location and directions to local shelters, directions, and where to go in the hotel in the event of a disaster. | WST, T | Н | Continue to provide emergency services information to local owners. Inspections can be done by Jefferson City Fire Dept. during normal inspections. Plans can be upgraded to ensure proper information is received. | ЕМС | Business associations | Local business | Min | I/C, PD | 2015 | local review/self inspectiosn | | |

| Figure | Figure 4.4.3c Mitigation Actions for Jefferson City | | | | | | | | | | | | | |
|----------|--|----------------------|----------|--|------------------------------------|--|---------------------------------|-------------------|---------------------------------|---------------------------------|---|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | | |
| | Encourage utility companies to continue to maintain power line right of way. | WW, WST, T | Н | Staff will observe and report possible power line right of way that requires maintenance. | Cnty Public Works | Local utility companies | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Observable power line right of ways are reviewed. | | | |
| 1.2.2 | Provide public education regarding the best tree species to plant near utility lines. | WW, WST, T | Н | Staff will inform all building applicants of proper tree plantings in proximity to utility lines. | Cnty Public Works | Local utility companies | Internal | Min | PD | Ongoing | Properties are reviewed and building applicants are informed. | | | |
| | · When possible, utilize underground lines. | WW, WST, T | Н | Staff will encourage underground service with building applicants and power providers. | Cnty Public Works | Local utility companies | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | All new services are reviewed. | | | |
| 1.2.3 | Encourage cooperative agreements between utility companies to help restore infrastructure post-event. | WW, WST, T | Н | Electric Co-ops are part of the EOC/LEPC during a disaster. The LEOP of the Co-ops does include immediate actions taken to restore power to needed facilities. | EMC | Local utility companies | Local funding | Mod | I/C, PD,LF, EMCC | 2015 | Local planning/self review | | | |
| 1.2.4 | Encourage purchase of drought insurance for agricultural community. | DR | М | Draft proclamation encouraging drought insurance for agricommunities. | CntyCom | USDA insurance agents, University Outreach & Extension | Internal | Mod | PD | 2012 | Review current properties for compliance. | | | |
| 1.2.5 | Encourage property owners to purchase earthquake insurance. | EQ | M | Cooperatively meet and encourage all property owners to participate. | CntyComm, local gov councils | Realtors, Insurance companies | NA | Mod | PD | 2015 | Increased insurance coverage for earthquake. | | | |
| 1.2.6 | Encourage owners of homes and businesses to consider the use of fire resistant shingles in new construction and re-roofing projects. | WF | М | Cooperatively meet and encourage all property owners to participate. | JC/Cnty Planning | Local contractors, home improvement stores | NA | Mod | I/C, PD,LF | 2015 | Increased use of fire resistant shingles in new construction and re-roofings. | | | |

| Figure | Mitigation Actions for Jefferson City | | | | | | | | | | | | | |
|----------|---|---------------------------------|----------|--|---------------------------------|------------------------|---------------------------------|-------------------|---------------------------------|---------------------------------|---|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | | |
| | Review and update flood damage prevention ordinance to ensure maximum protection from flood hazard events. | | Н | Continue to review and update plan. | Cnty/JC Planning | CntyCom, JC Council | FEMA/City | Mod | I/C, PD,LF, EMCC | 2015 | Flood damage prevention ordinance is reviewed regularly and updated when needed. | | | |
| 2.1.1 | Consider adopting temporary moratorium on building in flood hazard areas until ordinance is revised. | FL | М | Continue to review and update plan. | Cnty/JC Planning | CntyCom, JC Council | FEMA/City | Mod | I/C, PD,LF, EMCC | 2015 | Temporary moratorium is adopted if deemed necessary. | | | |
| | · Advise/assist property owners in retrofitting their homes and businesses to better respond to floods. | | Н | Cooperatively meet and encourage all property owners to participate. | Cnty/JC Planning | CntyCom, JC Council | FEMA/City | Sig | I/C, PD,LF, EMCC | 2015 | Property owners receive information on retrofitting for flood damage prevention. | | | |
| 2.1.2 | Continue to enforce flood damage prevention/ floodplain management ordinances in compliance with NFIP requirements. | FL, LF | Н | Continue to enforce floodplain regulations. | Cnty/Local councils | | FEMA/City | Mod | I/C, PD,LF, EMCC | 2015 | Flood damage prevention/floodplai n management ordinances are enforced. | | | |
| 2.1.4 | Maintain bridge and culvert standards to prevent debris from clogging waterways. | FL | Н | Continue to monitor public facilities. | Cnty/Local councils | | City | Mod | I/C, PD,LF, EMCC | 2015 | Waterways are free from debris. | | | |
| 2.1.5 | Add sinkhole regulations to stream buffer/storm water ordinance. | SK | Н | Continue to review and update plan. | Local councils | | City/EPA | Min | I/C, PD,LF, EMCC | 2015 | Sinkhole regulations are added to stream buffer/storm water ordinance. | | | |
| 2.2.1 | Adopt and enforce appropriate model building codes and national engineering standards. | EQ, WF, WST, T, HST | Н | Continue to review and update plan. | CntyCom, local gov councils | Local contractors | City | Mod | I/C, PD,LF, EMCC | 2015 | Appropriate model building codes are adopted and enforced. | | | |

| Figure | Figure 4.4.3e Mitigation Actions for Jefferson City | | | | | | | | | | | | | |
|----------|--|----------------------|----------|--|---|---|---------------------------------|-------------------|---------------------------------|---------------------------------|---|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | | |
| 2.2.2 | Encourage appropriate land use development downstream from dams. | DF | Н | Continue to review and update plan. | CntyCom, local gov councils | JC Public Works | City/County | Min | I/C, PD,LF, EMCC | 2015 | Land downstream from dams is appropriately developed. | | | |
| 2.2.3 | Discourage road building on dams. | DF | Н | Continue to monitor public facilities. | CntyCom, local gov councils | Cnty and local gov public works | City/County | Min | I/C, PD,LF, EMCC | 2015 | Fewer roads are built on dams. | | | |
| 2.2.3 | Overflow from dam should not pass over road surface. | DF | M | Continue to monitor public facilities. | CntyCom, local gov councils | Cnty and local gov public works | City/County | Mod | I/C, PD,LF, EMCC | 2015 | Overflow from dams does not pass over road surfaces. | | | |
| 2.2.4 | Limit construction and development in known subsidence/ sinkhole areas. | SK | M | Continue to actively review building plans. | Local councils | | City | Mod | I/C, PD,LF, EMCC | 2015 | Development and construction is limited in known subsidence/sinkhole areas. | | | |
| 3.1.1 | Mitigate the effects of flooding on public infrastructure. | FL | Н | Continue to monitor public facilities. | CntyCom, local councils | | City | Sig | I/C, PD,LF, EMCC | 2015 | Decreased damage from flooding to public infrastructure. | | | |
| | Brace/reinforce items within critical infrastructure. | | Н | Continue to review and inspect facilities/equipment. | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | City/County | Sig | I/C, PD,LF, EMCC | 2015 | Items are braced within critical infrastructure. | | | |
| 3.1.2 | Brace high value equipment. | EQ | Н | Continue to review and inspect facilities/equipment. | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | City | Sig | I/C, PD,LF, EMCC | 2015 | High value equipment is braced. | | | |
| | Brace equipment that could fall causing injury or block evacuation routes. | | Н | Continue to review and inspect facilities/equipment. | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | City | Sig | I/C, PD,LF, EMCC | 2015 | Equipment that could cause injury or block evaluation routes is braced. | | | |
| 3.1.3 | Encourage the bracing of high value equipment such as furnaces, water heaters, and above ground tanks. | EQ, W, T | Н | Continue to review and inspect facilities/equipment. | Cnty/local municipal public works | Home- and business- owners | City | Sig | I/C, PD,LF, EMCC | 2015 | High value equipment is braced. | | | |

| Figure | Figure 4.4.3f Mitigation Actions for Jefferson City | | | | | | | | | | | | |
|----------|---|---|----------|--|---|--|---------------------------------|-------------------|---------------------------------|---------------------------------|---|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| 3.1.4 | Provide backup power to all critical infrastructure such as police, fire, hospitals, local government buildings, and designated shelters. | EQ, HT, WW, WF, WST, | Н | Cole County has purchased a large portable generator for backup to some facilities. JCPD has a backup system in place, CCSO as well. Continue to ask shelter sites to provide backup or transfer switches. | EMC | Mass Care Coodinator;Re d Cross | City/County Gov'ts | Sig | I/C, PD,LF, EMCC | 2015 | Local review | | |
| 3.1.5 | Encourage removal of vegetation and combustible materials around homes, businesses, and critical infrastructure. | WF | Н | Continue to encourage and educate property owners. | Cnty/JC Public Works | Fire districts and departments | City/Private | Min | I/C, PD,LF, EMCC | 2015 | Increased removal of vegetation and combustible materials from around homes, businesses, and critical infrastructure. | | |
| 3.1.6 | Evaluate access problems to critical infrastructure in the event of a flood. | FL | Н | Continue to work with County/City public works. | Emerg Mgmt | CntyCom, local gov councils | Local | Mod | I/C, PD,LF, EMCC | 2015 | LEOP | | |
| 3.2.1 | Continue to alert the public of hazardous weather via early warning sirens/electronic notification system or establish a mass notification system where needed. | WST, T | Н | Continue to review and update plan. | JC Police Chief, Lincoln U Police Dept. | EMC, Cnty Sheriff, Fire Chiefs, Cnty PW Dir, Capitol Region EMS | FEMA/City | Sig | I/C, PD,LF, EMCC | 2015 | Public receives timely and adequate notice of hazardous weather. | | |
| 3.2.3 | Ensure evacuation routes are adequate in the event of a major hazard. If needed, pursue methods for improving capacity. | FL | Н | Continue to work with County/City public works. | EMC | Public Works (County, JC) | Local | Sig | I/C, PD,LF, EMCC | 2015 | LEOP | | |
| 3.2.4 | Establish formal agreements with appropriate shelter locations throughout Cole County. | EQ, HT, FL, WW, WST, T, HST | Н | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | EMC | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | |

| Figure 4.4.3g Mitigation Actions for Jefferson City □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ | | | | | | | | | | | | | |
|---|--|---------------------------|----------|---|---|--|---------------------------------|-------------------|---------------------------------|---------------------------------|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| | Encourage development of formal agreements with shelters that have alternative heating sources. | | | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | |
| 3.2.5 | Identify vulnerable populations needing potential relocation to shelter in event of power outage. | WW | Н | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | ЕМС | American Red Cross/ County Health Dept. | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | |
| | · Identify potential transportation. | | | Ensure transportation with JC Jefftran and local school bus vendors. | | American Red Cross/ Jefferson City Community Development | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review/LEOP | | |
| 3.2.6 | Establish and maintain a system of temporary alternative placement sites ("safe houses") for emergency evacuation and shelter of school populations. | EQ, HT, WF, WST, | Н | Continue to review and update plan. | School district admin | Local gov, public/private orgs | City/Emergen cy Services | Mod | I/C, PD,LF, EMCC | 2015 | School populations have placement sites for emergency evacuations and shelter. | | |
| 3.2.7 | Encourage camping and RV facilities and mobile home parks to have saferooms on the premises. | W, T, HST | Н | Continue to encourage and educate property owners. | CntyCom, local gov councils | Cnty/JC Planning | NA | Sig | I/C, PD,LF, EMCC | 2015 | More saferooms at camping/RV facilities and mobile home parks. | | |
| 3.2.8 | Encourage the construction of tornado safe rooms. | WST, T | Н | Continue to encourage and educate property owners. | CntyCom, local councils, school district/ Lincoln U admin | | FEMA/Private | Sig | I/C, PD,LF, EMCC | 2015 | More tornado safe rooms available. | | |
| 3.2.9 | Assist owners of regulated high hazard dams with development of the Emergency Action Plans (EAPs) required in conjunction with the inundation studies being conducted. | DF | Н | Continue to work with Department of Natural Resources, engineers and state regulations. | Dam owners | ЕМС | Local owners | Mod | I/C, PD,LF, EMCC | 2015 | Completed plans | | |

| Figure | igure 4.4.3h Mitigation Actions for Jefferson City | | | | | | | | | | | | | |
|----------|---|---|----------|--|--|---|---------------------------------|-------------------|---------------------------------|---------------------------------|---|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | | |
| 4.0.1 | Develop public education hazard awareness program. | DF, DR, EQ, HT, FL, SK, LF, WW, WF, WND, T, | Н | Continue to support and assist existing service providers. | Emer Mgmt, County Planning, County and JC Public Works | | City/Private | Mod | I/C, PD,LF, EMCC | 2015 | Public is well educated regarding potential hazards. | | | |
| 4.0.2 | Establish flood warning signs at known flooding locations. | FL | Н | Cooperatively develop programs and identify funding sources. | Cnty Public Works, local gov councils | | City/County | Mod | I/C, PD,LF, EMCC | 2015 | Known flooding locations are adequately posted with warnings. | | | |
| 4.0.3 | Establish educational materials for public regarding potential problems an earthquake in Missouri could cause. | EQ | Н | Continue to provide updated materials through FEMA/SEMA. | EMC | Univ of MO Outreach and Extension | | Mod | I/C, PD,LF, EMCC | 2015 | local review | | | |
| 4.0.4 | Encourage schools to include earthquake safety programs in with other emergency preparedness training. | EQ | Н | Ensure schools include emergency messages and drills. | EMC | Local school districts | local | Mod | I/C, PD,LF, EMCC | 2015 | Local Review | | | |

| Figure | Figure 4.4.3i Mitigation Actions for Jefferson City | | | | | | | | | | | | | |
|----------|---|----------------------|----------|--|---|---|--|-------------------|---------------------------------|---------------------------------|--|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | | |
| | Provide public education materials before storm events to inform people of the danger of icy roads. | | Н | Continue to provide emergency messages through media contacts. | | 911 communciatio ns, County/City public works/ JCPD, CCSO | local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | | |
| 4.0.5 | Have emergency supplies available at homes. | WW | Н | Continue providing community emergency programs, CERT. | EMC | CERT Team (Community Emergency Response Team) Citizen Corps Coordinator | Local/Homela nd Security grant funding | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | | |
| 4.0.6 | Encourage safe driving through public education campaigns, websites, and community events. | ww | Н | Cooperatively work with other agencies to educate the public. | Local police depts, driver education courses | Schools, MoDOT, etc | Various | Mod | I/C, PD,LF, EMCC | 2015 | Public is well educated regarding safe driving practices. | | | |
| 4.0.7 | Provide education to homeowners living near large fuel areas (forest, grasslands, etc.) on what they can do to minimize risk. | WF | Н | Cotinue to provide wildfire messages, burn ban announcements and statewide Firewise program. | EMC | Fire districts and departments | local | Mod | I/C, PD,LF, EMCC | 2015 | Local review/ FD education programs | | | |
| 5.0.1 | Acquire destroyed or substantially damaged properties and relocate people voluntarily. | FL | Н | Copperatively work with other agencies to acquire and relocate. | Cnty/JC Planning/Local council | SEMA HMGP | Various | Sig | I/C, PD,LF, EMCC | 2015 | Properties are acquired and people are relocated. | | | |
| 5.0.2 | Acquire properties in repetitively flooded areas involuntarily. | FL | Н | Cooperatively work with other agencies to acquire. | JC/Cnty Planning and Public Works, MOVOAD | | FEMA | Sig | I/C, PD,LF, EMCC | 2015 | Repetitively flooded properties are acquired. | | | |

| Figure | Figure 4.4.3j Mitigation Actions for Jefferson City | | | | | | | | | | | | |
|----------|--|----------------------|----------|--|---|--|---------------------------------|-------------------|---------------------------------|---------------------------------|---|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| | Require developers to build in accordance with locally accepted codes. | EQ | Н | Cooperatively work with developers. | Cnty/JC Public Works and Planning | Local contractors, CntyCom, local gov councils | City | Mod | I/C, PD,LF, EMCC | 2015 | Building is done in accordance with locally accepted codes. | | |
| | Encourage the retrofitting of structures to new earthquake safety standards when undergoing renovations/ improvements. | EQ | Н | Cooperatively work with developers. | Cnty/JC Public Works and Planning | Local contractors, CntyCom, local gov councils | FEMA | Sig | I/C, PD,LF, EMCC | 2015 | More buildings meet earthquake safety standards. | | |
| 5.0.6 | Maintain resources for public on retrofitting and protection techniques. | FL | Н | Supply needed international Code requirements. | EMC | Cnty/local gov public works | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local adoptions of codes | | |

No changes made to priorities or projected costs.

4.4.4 Lohman

| Fig. 4.4. | ig. 4.4.4a Mitigation Actions for Lohman | | | | | | | | | | | | | |
|-----------|--|----------------------------------|----------|---|---------------------------------|--|---------------------------------|-------------------|---------------------------------|---------------------------------|---|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | | |
| 1.1.1 | Revise and update regulatory floodplain maps. | FL | Н | Present any future maps to County Commission for adoption. | SEMA, FEMA, MODNR | Cnty/JC Planning, EOD | Internal | Mod | I/C, PD,LF, EMCC | 2012 | Court order by County Commission accepting new maps. | | | |
| 1.1.2 | Encourage participation in the National Flood Insurance Program (NFIP). | FL | Н | Board of Aldermen invited a SEMA staff member to a meeting to explain NFIP participation to them; Board is currently discussing possible participation. | Board of Aldermen | SEMA | Internal | Mod | I/C, PD,LF, EMCC | 2011 | Decision is made on NFIP participation. | | | |
| 1.1.4 | Set up centralized, coordinated permitting process to ensure compliance with floodplain regulations. | FL | Н | This will be dealt with after the decision is made on NFIP participation. | Board of Aldermen | SEMA | Internal | Min | I/C, PD,LF, EMCC | 2011 | Permitting process is in place. | | | |
| 1.1.9 | Have alternate power supplies for fueling emergency vehicles. | EQ, HT, WW, WF, WST, | Н | Cole County Public Works has installed a Generator Backup system for the entire complex. JC has a backup system in place. | EMC | Local police, sheriff, fire depts, ambulance districts | Local funding | Sig | I/C, PD,LF, EMCC | 2015 | Local review | | | |
| 1.1.13 | Encourage appropriate County and City staff to continually update their knowledge base regarding earthquake safety. | EQ | Н | City official will attend an earthquake training. | Board of Aldermen | SEMA/FEMA | Local funding | Mod | I/C, PD,LF, EMCC | 2012 | Training attended; knowledge updated. | | | |
| 1.1.14 | Ensure the ability to respond to a severe winter weather event through advance preparation of maintenance areas and acquisition of stocks of chemicals and fuel appropriate for the length of a typical event. | WW | Н | Lohman contracts with County to clear roads in winter storms. | Board of Aldermen | Cnty Public Works | Local funding | Mod | I/C, PD,LF, EMCC | Ongoing | Severe winter weather events are responded to in a timely fashion. | | | |

| Fig. 4.4. | Fig. 4.4.4b Mitigation Actions for Lohman | | | | | | | | | | | | | |
|-----------|--|----------------------|----------|---|---------------------------------|--|---------------------------------|-------------------|---------------------------------|---------------------------------|--|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | | |
| | Encourage utility companies to continue to maintain power line right of way. | WW, WST, T | Н | Staff will observe and report possible power line right of way that requires maintenance. | Cnty Public Works | Local utility companies | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Observable power line right of ways are reviewed. | | | |
| 1.2.2 | · Provide public education regarding the best tree species to plant near utility lines. | WW, WST, T | Н | Staff will inform all building applicants of proper tree plantings in proximity to utility lines. | Cnty Public Works | Local utility companies | Internal | Min | PD | Ongoing | Properties are reviewed and building applicants are informed. | | | |
| | · When possible, utilize underground lines. | WW, WST, T | Н | Staff will encourage underground service with building applicants and power providers. | Cnty Public Works | Local utility companies | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | All new services are reviewed. | | | |
| 1.2.3 | Encourage cooperative agreements between utility companies to help restore infrastructure post-event. | WW, WST, T | Н | Electric Co-ops are part of the EOC/LEPC during a disaster. The LEOP of the Co-ops does include immediate actions taken to restore power to needed facilitites. | EMC | Local utility companies | Local funding | Mod | I/C, PD,LF, EMCC | 2015 | Local planning/self review | | | |
| 1.2.4 | Encourage purchase of drought insurance for agricultural community. | DR | М | Draft proclamation encouraging drought insurance for agricommunities. | CntyCom | USDA insurance agents, University Outreach & Extension | Internal | Mod | PD | 2012 | Review current properties for compliance. | | | |
| 1.2.6 | Encourage owners of homes and businesses to consider the use of fire resistant shingles in new construction and re-roofing projects. | WF | М | Draft/provide information to be distributed to home and business owners, as well as building applicants, in regard to fire resistant roofing. | JC/Cnty Planning | Local contractors, home improvement stores | Internal | Mod | I/C, PD,LF | Ongoing | Recommend resistant materials to building applicants. | | | |
| 2.1.4 | Maintain bridge and culvert standards to prevent debris from clogging waterways. | FL | Н | The only bridge in town is on the state highway and is maintained by MoDOT; the city contracts with the County to maintain the culverts. | Board of Aldermen/MoD OT | County Public Works | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Water flows freely in waterways. | | | |

| Fig. 4.4. | Fig. 4.4.4c Mitigation Actions for Lohman | | | | | | | | | | | | | |
|-----------|---|----------------------------------|----------|--|---|---|---|-------------------|---------------------------------|---------------------------------|---|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | | |
| 2.2.1 | Adopt and enforce appropriate model building codes and national engineering standards. | EQ, WF, WST, T, HST | Н | Lohman has adopted the County codes and the County does the building inspections. | Board of Aldermen | County Public Works | Building owners pay cost of inspections. | Mod | I/C, PD,LF, EMCC | Ongoing | Codes are appropriate and enforced. | | | |
| | Brace/reinforce items within critical infrastructure. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations | | | |
| 3.1.2 | Brace high value equipment. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations | | | |
| | Brace equipment that could fall causing injury or block evacuation routes. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations | | | |
| | Provide backup power to all critical infrastructure such as police, fire, hospitals, local government buildings, and designated shelters. | EQ, HT, WW, WF, WST, | Н | Cole County has purchased a large portable generator for backup to some facilities. JCPD has a backup system in place, CCSO as well. Continue to ask shelter sites to provide backup or transfer switches. | EMC | Mass Care Coodinator;Re d Cross | City/County Gov'ts | Sig | I/C, PD,LF, EMCC | 2015 | Local review | | | |
| | Encourage removal of vegetation and combustible materials around homes, businesses, and critical infrastructure. | WF | Н | Staff will prepare information to educate the public in regard to removal of combustible materials | Cnty/JC Public Works | Fire districts and departments | Internal | Min | I/C, PD,LF, EMCC | Ongoing | Inform the public of benefits of removal of unnecessary materials | | | |
| 3.1.6 | Evaluate access problems to critical infrastructure in the event of a flood. | FL | Н | Continue to work with County/City public works. | Emerg Mgmt | CntyCom, local gov councils | Local | Mod | I/C, PD,LF, EMCC | 2015 | LEOP | | | |

| Fig. 4.4. | Fig. 4.4.4d Mitigation Actions for Lohman ### ### ############################ | | | | | | | | | | | | | |
|-----------|---|---|----------|--|---------------------------------|--|---------------------------------|-------------------|---------------------------------|---------------------------------|---|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | | |
| 3.2.1 | Continue to alert the public of hazardous weather via early warning sirens/electronic notification system or establish a mass notification system where needed. | WST, T | Н | The warning sirens for Lohman are operated by the Jefferson City Police Dept. | JC Police Chief | EMD, Cnty Sheriff, Fire Chiefs, Cnty PW Dir, Capitol Region EMS | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Public is given sufficient warning of hazardous weather. | | | |
| 3.2.3 | Ensure evacuation routes are adequate in the event of a major hazard. If needed, pursue methods for improving capacity. | FL | Н | Continue to work with County/City public works. | EMC | Public Works (County, JC) | Local | Sig | I/C, PD,LF, EMCC | 2015 | LEOP | | | |
| 3.2.4 | Establish formal agreements with appropriate shelter locations throughout Cole County. | EQ, HT, FL, WW, WST, T, HST | Н | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | EMC | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | | |
| | Encourage development of formal agreements with shelters that have alternative heating sources. | | | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | | |
| 3.2.5 | Identify vulnerable populations needing potential relocation to shelter in event of power outage. | ww | Н | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | EMC | American Red Cross/ County Health Dept. | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | | |
| | · Identify potential transportation. | | | Ensure transportation with JC Jefftran and local school bus vendors. | | American Red Cross/ Jefferson City Community Development | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review/LEOP | | | |

| Fig. 4.4. | Mitigation Actions for Lohman | | | | | | | | | | | | | |
|-----------|---|--|----------|--|---------------------------------|---|--|-------------------|---------------------------------|---------------------------------|--------------------------|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | | |
| 4.0.1 | Develop public education hazard awareness program. | DF, DR, EQ, HT, FL, SK, LF, WW, WF, WND, T, HST | Н | Continue to provde updated emergency education messages to the public, schools neighborhood watch programs, etc. | Emer Mgmt | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | local review | | | |
| 4.0.3 | Establish educational materials for public regarding potential problems an earthquake in Missouri could cause. | EQ | Н | Continue to provide updated materials through FEMA/SEMA. | EMC | Univ of MO Outreach and Extension | | Mod | I/C, PD,LF, EMCC | 2015 | local review | | | |
| 4.0.4 | Encourage schools to include earthquake safety programs in with other emergency preparedness training. | EQ | Н | Ensure schools include emergency messages and drills. | EMC | Local school districts | local | Mod | I/C, PD,LF, EMCC | 2015 | Local Review | | | |
| | Provide public education materials before storm events to inform people of the danger of icy roads. | | Н | Continue to provide emergency messages through media contacts. | | 911 communciatio ns, County/City public works/ JCPD, CCSO | local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | | |
| 4.0.5 | · Have emergency supplies available at homes. | WW | Н | Continue providing community emergency programs, CERT. | EMC | CERT Team (Community Emergency Response Team) Citizen Corps Coordinator | Local/Homela nd Security grant funding | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | | |

| Fig. 4.4. | Fig. 4.4.4f Mitigation Actions for Lohman | | | | | | | | | | | | |
|-----------|---|----------------------|----------|--|---|--|---------------------------------|-------------------|---------------------------------|---------------------------------|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| 4.0.7 | Provide education to homeowners living near large fuel areas (forest, grasslands, etc.) on what they can do to minimize risk. | WF | Н | Cotinue to provide wildfire messages, burn ban announcements and statewide Firewise program. | EMC | Fire districts and departments | local | Mod | I/C, PD,LF, EMCC | 2015 | Local review/ FD education programs | | |
| 5.0.4 | Require developers to build in accordance with locally accepted codes. | EQ | Н | Staff currently requires all building development to be built to adopted building codes. | Cnty/JC Public Works and Planning | Local contractors, CntyCom, local gov councils | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Inspect development/buildi ngs for current code compliance | | |
| 5.0.5 | Encourage the retrofitting of structures to new earthquake safety standards when undergoing renovations/ improvements. | EQ | Н | Draft/prepare educational materials for public in regard to retrofitting | Cnty/JC Public Works and Planning | Local contractors, CntyCom, local gov councils | Internal/SEM A grants | Sig | I/C, PD,LF, EMCC | Ongoing | Distribute information to local centers of information/media outlets | | |
| | Maintain resources for public on retrofitting and protection techniques. | FL | Н | Supply needed international Code requirements. | EMC | Cnty/local gov public works | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local adoptions of codes | | |

Changes

3.2.1 The projected cost was changed from Significant to Moderate because any cost incurred to Lohman for this service will be paid through internal funds.

4.4.5 Russellville

| Fig. 4.4 | Fig. 4.4.5 a Mitigation Actions for Russellville | | | | | | | | | | | | |
|----------|---|----------------------------------|----------|---|---------------------------------|--|---------------------------------|-------------------|---------------------------------|---------------------------------|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| | Revise and update regulatory floodplain maps. | FL | Н | Present any future maps to County Commission for adoption. | SEMA, FEMA, MODNR | Cnty/JC Planning, EOD | Internal | Mod | I/C, PD,LF, EMCC | 2012 | Court order by County Commission accepting new maps. | | |
| 1.1.7 | Continue development of storm water programs and ensure adequate maintenance of drainage systems. | FL | Н | Quarterly maintenance; clean culverts on a regular basis. | City Public Works | County | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Culverts are cleaned quarterly. | | |
| 1.1.9 | Have alternate power supplies for fueling emergency vehicles. | EQ, HT, WW, WF, WST, | Н | Cole County Public Works has installed a Generator Backup system for the entire complex. JC has a backup system in place. | EMC | Local police, sheriff, fire depts, ambulance districts | Local funding | Sig | I/C, PD,LF, EMCC | 2015 | Local review | | |
| 1.1.11 | Encourage all water providers to install electric transfer switches and/or backup generators. | EQ, HT, WW, WF, WST, | Н | Work with MRWA (MO Rural Water Association). | City Clerk | Public and private water utilities. | Grants or interal. | Sig | I/C, PD,LF, EMCC | 2012 | Backup generators are available. | | |
| 1.1.12 | Encourage public and private water providers to develop distribution systems so that they interconnect with established distribution systems. | DR, WF | Н | Work with other towns to network. | City Clerk | Public and private water providers | Grant | Sig | I/C, PD,LF, EMCC | 2016 | Interconnect system in place. | | |
| 1.1.13 | Encourage appropriate County and City staff to continually update their knowledge base regarding earthquake safety. | EQ | Н | Gather information from partner source to update. | City Clerk | Emerg Mgmt | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Information updated as it becomes available. | | |

| Fig. 4.4 | Fig. 4.4.5 b Mitigation Actions for Russellville | | | | | | | | | | | | |
|----------|--|----------------------|----------|--|--|--|---------------------------------|-------------------|---------------------------------|---------------------------------|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| 1.1.14 | Ensure the ability to respond to a severe winter weather event through advance preparation of maintenance areas and acquisition of stocks of chemicals and fuel appropriate for the length of a typical event. | ww | Н | Prepare in advance to ensure sufficient supplies are on hand or available before an event. | City/Cnty Public Works, City Clerk | Private contractors | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Contacts with County Public Works ensured acquisition of materials needed. | | |
| | Encourage utility companies to continue to maintain power line right of way. | WW, WST, T | Н | Staff will observe and report possible power line right of way that requires maintenance. | Cnty Public Works | Local utility companies | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Observable power line right of ways are reviewed. | | |
| 1.2.2 | Provide public education regarding the best tree species to plant near utility lines. | WW, WST, T | Н | Staff will inform all building applicants of proper tree plantings in proximity to utility lines. | Cnty Public Works | Local utility companies | Internal | Min | PD | Ongoing | Properties are reviewed and building applicants are informed. | | |
| | · When possible, utilize underground lines. | WW, WST, T | Н | Staff will encourage underground service with building applicants and power providers. | Cnty Public Works | Local utility companies | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | All new services are reviewed. | | |
| 1.2.3 | Encourage cooperative agreements between utility companies to help restore infrastructure post-event. | WW, WST, T | Н | Electric Co-ops are part of the EOC/LEPC during a disaster. The LEOP of the Co-ops does include immediate actions taken to restore power to needed facilities. | EMC | Local utility companies | Local funding | Mod | I/C, PD,LF, EMCC | Ongoing | Local planning/self review | | |
| 1.2.4 | Encourage purchase of drought insurance for agricultural community. | DR | М | Draft proclamation encouraging drought insurance for agricommunities. | CntyCom | USDA insurance agents, University Outreach & Extension | Internal | Mod | PD | 2012 | Review current properties for compliance. | | |
| 1.2.5 | Encourage property owners to purchase earthquake insurance. | EQ | М | Communicate with property owners. | City Clerk | Realtors, Insurance companies | Internal | Mod | PD | Ongoing | Reminder posted on the Web. | | |

| Fig. 4.4 | Fig. 4.4.5 c Mitigation Actions for Russellville | | | | | | | | | | | | |
|----------|---|----------------------------------|----------|--|--|--|--|-------------------|---------------------------------|---------------------------------|---|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| 1.2.6 | Encourage owners of homes and businesses to consider the use of fire resistant shingles in new construction and re-roofing projects. | WF | M | Draft/provide information to be distributed to home and business owners, as well as building applicants, in regard to fire resistant roofing. | JC/Cnty Planning | Local contractors, home improvement stores | Internal | Mod | I/C, PD,LF | Ongoing | Recommend resistant materials to building applicants. | | |
| 2.1.4 | Maintain bridge and culvert standards to prevent debris from clogging waterways. | FL | Н | Implement a plan for cleaning ditches. | City Council, City Clerk, City Public Works | County | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Ditches are cleared of debris. | | |
| 2.2.1 | Adopt and enforce appropriate model building codes and national engineering standards. | EQ, WF, WST, T, HST | Н | County responsible for building codes. | County Planning/Public Works | Local contractors | Paid for by owners being inspected | Min | I/C, PD,LF, EMCC | Ongoing | County enforces building codes and standards. | | |
| | Brace/reinforce items within critical infrastructure. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations | | |
| 3.1.2 | · Brace high value equipment. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations | | |
| | Brace equipment that could fall causing injury or block evacuation routes. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations | | |
| 3.1.3 | Encourage the bracing of high value equipment such as furnaces, water heaters, and above ground tanks. | EQ, W, T | Н | Staff would develop a plan for working patrons. | City Council, City Clerk | Home- and business- owners | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Information fact sheets made available on how to brace high value equipment and posted on website. | | |
| 3.1.4 | Provide backup power to all critical infrastructure such as police, fire, hospitals, local government buildings, and designated shelters. | EQ, HT, WW, WF, WST, | Н | Cole County has purchased a large portable generator for backup to some facilities. JCPD has a backup system in place, CCSO as well. Continue to ask shelter sites to provide backup or transfer switches. | EMC | Mass Care Coodinator;Re d Cross | City/County Gov'ts | Sig | I/C, PD,LF, EMCC | 2015 | Local review | | |

| Fig. 4.4 | Fig. 4.4.5 d Mitigation Actions for Russellville | | | | | | | | | | | | |
|----------|---|---|----------|---|---------------------------------|--|---------------------------------|-------------------|---------------------------------|---------------------------------|---|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| 3.1.5 | Encourage removal of vegetation and combustible materials around homes, businesses, and critical infrastructure. | WF | Н | Staff will prepare information to educate the public in regard to removal of combustible materials | Cnty/JC Public Works | Fire districts and departments | Internal | Min | I/C, PD,LF, EMCC | Ongoing | Inform the public of benefits of removal of unnecessary materials | | |
| 3.1.6 | Evaluate access problems to critical infrastructure in the event of a flood. | FL | Н | Continue to work with County/City public works. | Emerg Mgmt | CntyCom, local gov councils | Local | Mod | I/C, PD,LF, EMCC | 2015 | LEOP | | |
| 3.2.1 | Continue to alert the public of hazardous weather via early warning sirens/electronic notification system or establish a mass notification system where needed. | WST, T | Н | Warning systems are automatically tested through 911. A check system is in place to ensure sirens are functioning properly. | JC Police Chief | Cnty Sheriff, Fire Chiefs, Cnty PW Dir, Capitol Region EMS | Internal | Min | I/C, PD,LF, EMCC | Ongoing | Regular testing | | |
| 3.2.3 | Ensure evacuation routes are adequate in the event of a major hazard. If needed, pursue methods for improving capacity. | FL | Н | Continue to work with County/City public works. | EMC | Public Works (County, JC) | Local | Sig | I/C, PD,LF, EMCC | 2015 | LEOP | | |
| 3.2.4 | Establish formal agreements with appropriate shelter locations throughout Cole County. | EQ, HT, FL, WW, WST, T, HST | Н | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | ЕМС | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | |

| Fig. 4.4 | Mitigation Actions for Russellville | | | | | | | | | | | | | |
|----------|--|---------------------------|----------|--|---------------------------------|--|---------------------------------|-------------------|---------------------------------|---------------------------------|--|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | | |
| | Encourage development of formal agreements with shelters that have alternative heating sources. | | | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | | |
| 1 | Identify vulnerable populations needing potential relocation to shelter in event of power outage. | ww | Н | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | ЕМС | American Red Cross/ County Health Dept. | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | | |
| | · Identify potential transportation. | | | Ensure transportation with JC Jefftran and local school bus vendors. | | American Red Cross/ Jefferson City Community Development | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review/LEOP | | | |
| | Establish and maintain a system of temporary alternative placement sites ("safe houses") for emergency evacuation and shelter of school populations. | EQ, HT, WF, WST, | Н | This is part of the overall Emergency Operations Plan | School district admin | Local gov, public/private orgs | Internal | Mod | I/C, PD,LF, EMCC | 2016 | Alternative safe houses are established. | | | |
| 3.2.7 | Encourage camping and RV facilities and mobile home parks to have saferooms on the premises. | W, T, HST | Н | Staff will watch for grant opportunities and communicate with owners/write grant applications. | City Clerk | County | Grants | Sig | I/C, PD,LF, EMCC | 2016 | Safe rooms acquired. | | | |
| 3.2.8 | Encourage the construction of tornado safe rooms. | WST, T | Н | Staff will watch for grant opportunities and communicate with owners/write grant applications. | City Clerk | County | Grants | Sig | I/C, PD,LF, EMCC | 2016 | Safe rooms acquired. | | | |

| Fig. 4.4.5 f Mitigation Actions for Russellville | | | | | | | | | | | | |
|--|---|--|----------|--|--|---|--|-------------------|---------------------------------|---------------------------------|--------------------------|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | |
| 4.0.1 | Develop public education hazard awareness program. | DF, DR, EQ, HT, FL, SK, LF, WW, WF, WND, T, HST | Н | Continue to provde updated emergency education messages to the public, schools neighborhood watch programs, etc. | Emer Mgmt, County Planning, County and JC Public Works | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | local review | |
| 4.0.3 | Establish educational materials for public regarding potential problems an earthquake in Missouri could cause. | EQ | Н | Continue to provide updated materials through FEMA/SEMA. | EMC | Univ of MO Outreach and Extension | | Mod | I/C, PD,LF, EMCC | 2015 | local review | |
| 4.0.4 | Encourage schools to include earthquake safety programs in with other emergency preparedness training. | EQ | Н | Ensure schools include emergency messages and drills. | EMC | Local school districts | local | Mod | I/C, PD,LF, EMCC | 2015 | Local Review | |
| | Provide public education materials before storm events to inform people of the danger of icy roads. | | Н | Continue to provide emergency messages through media contacts. | | 911 communciatio ns, County/City public works/ JCPD, CCSO | local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | |
| 4.0.5 | Have emergency supplies available at homes. | WW | Н | Continue providing community emergency programs, CERT. | ЕМС | CERT Team (Community Emergency Response Team) Citizen Corps Coordinator | Local/Homela nd Security grant funding | Mod | I/C, PD,LF, EMCC | 2015 | Local review | |

| Fig. 4.4 | Fig. 4.4.5 g Mitigation Actions for Russellville | | | | | | | | | | | | |
|----------|---|----------------------|----------|--|---|--|---------------------------------|-------------------|---------------------------------|---------------------------------|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| 4.0.6 | Encourage safe driving through public education campaigns, websites, and community events. | ww | Н | Staff will work with school and patrons on safety awareness. | City Clerk | School | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | City and School post on websites. | | |
| 4.0.7 | Provide education to homeowners living near large fuel areas (forest, grasslands, etc.) on what they can do to minimize risk. | WF | Н | Cotinue to provide wildfire messages, burn ban announcements and statewide Firewise program. | EMC | Fire districts and departments | local | Mod | I/C, PD,LF, EMCC | 2015 | Local review/ FD education programs | | |
| 5.0.3 | Encourage developer to include adequate storm water retention facilities on new builds. | FL | Н | Staff will review county codes on storm water retention. | City Clerk | Cole County Public Works | Grant | Sig | I/C, PD,LF, EMCC | 2016 | A storm water plan has been developed. | | |
| | Require developers to build in accordance with locally accepted codes. | EQ | Н | Staff currently requires all building development to be built to adopted building codes. | Cnty/JC Public Works and Planning | Local contractors, CntyCom, local gov councils | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Inspect development/buildi ngs for current code compliance | | |
| | Encourage the retrofitting of structures to new earthquake safety standards when undergoing renovations/ improvements. | EQ | Н | Draft/prepare educational materials for public in regard to retrofitting | Cnty/JC Public Works and Planning | Local contractors, CntyCom, local gov councils | Internal/SEM A grants | Sig | I/C, PD,LF, EMCC | Ongoing | Distribute information to local centers of information/media outlets | | |
| | Maintain resources for public on retrofitting and protection techniques. | FL | Н | Supply needed international Code requirements. | EMC | Cnty/local gov public works | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local adoptions of codes | | |

Changes

- 1.1.7 The projected cost was changed from Significant to Moderate because Cole County Public Works helps the city with projects such as this.
- 2.2.1 The projected cost was changed from Moderate to Minimal because Cole County enforces the building codes in Russellville; the owner of the building being inspected pays the fees.

- 3.1.2 The projected cost was changed from Significant to Moderate because Russellville plans to encourage the bracing of equipment but not actually provide funds for the bracing.
- 3.2.1 The projected cost was changed from Significant to Minimal because the warning system in Russellville is activated by 911 at the Jefferson City Police Department.

4.4.6 St. Martins

| Figure 4 | Figure 4.4.6a Mitigation Actions for St. Martins | | | | | | | | | | | | |
|----------|--|-----------------------------------|----------|---|---------------------------------|--|---------------------------------|-------------------|---------------------------------|---------------------------------|---|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| | Revise and update regulatory floodplain maps. | FL | Н | Present any future maps to County Commission for adoption. | SEMA, FEMA, MODNR | Cnty/JC Planning, EOD | Internal | Mod | I/C, PD,LF, EMCC | 2012 | Court order by County Commission accepting new maps. | | |
| 1.1.2 | Encourage participation in the National Flood Insurance Program (NFIP). | FL | Н | We will be looking into NFIP participation and making a decision on this. | Mayor/City Council | | Internal | Mod | I/C, PD,LF, EMCC | 2012 | Decision re: participation in NFIP. | | |
| 1.1.3 | Encourage participation in Community Rating System of National Flood Insurance Program (NFIP). | FL | Н | We will be looking into the CRS at the same time as the NFIP and making a decision on this. | Mayor/City Council | | Internal | Mod | I/C, PD,LF, EMCC | 2012 | Decision re: participation in CRS. | | |
| 1.1.4 | Set up centralized, coordinated permitting process to ensure compliance with floodplain regulations. | FL | Н | Look into this if decision is made to participate in the NFIP. | Mayor/City Council | | Internal | Min | I/C, PD,LF, EMCC | 2013 | Permitting process is in place. | | |
| 1.1.7 | Continue development of storm water programs and ensure adequate maintenance of drainage systems. | FL | Н | An engineer is currently mapping the system. | Mayor/City Council | Muldoon Engineering | Internal | Sig | I/C, PD,LF, EMCC | 2011 | City is mapped and further decisions re: needed improvements can be made. | | |
| 1.1.9 | Have alternate power supplies for fueling emergency vehicles. | EQ, HT, WW, WF, WST,T | Н | Cole County Public Works has installed a Generator Backup system for the entire complex. JC has a backup system in place. | EMC | Local police, sheriff, fire depts, ambulance districts | Local funding | Sig | I/C, PD,LF, EMCC | 2015 | Local review | | |
| 1.1.13 | Encourage appropriate County and City staff to continually update their knowledge base regarding earthquake safety. | EQ | Н | Planning to attend the next SEMA/FEMA training on earthquake preparedness. | Mayor | SEMA/FEMA | Internal | Min | I/C, PD,LF, EMCC | 2011 | Training attended | | |

| Figure 4 | Figure 4.4.6b Mitigation Actions for St. Martins | | | | | | | | | | | | |
|----------|--|----------------------|----------|--|---|--|---------------------------------|-------------------|---------------------------------|---------------------------------|---|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| 1.1.14 | Ensure the ability to respond to a severe winter weather event through advance preparation of maintenance areas and acquisition of stocks of chemicals and fuel appropriate for the length of a typical event. | WW | Н | This is currently being done in cooperation with Cole County Public Works. | St. Martins Public Works, Cole County Public Works | | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Severe winter weather events can be fully responded to in a timely fashion. | | |
| | Encourage utility companies to continue to maintain power line right of way. | WW, WST, T | Н | Staff will observe and report possible power line right of way that requires maintenance. | Cnty Public Works | Local utility companies | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Observable power line right of ways are reviewed. | | |
| 1.2.2 | · Provide public education regarding the best tree species to plant near utility lines. | WW, WST, T | Н | Staff will inform all building applicants of proper tree plantings in proximity to utility lines. | Cnty Public Works | Local utility companies | Internal | Min | PD | Ongoing | Properties are reviewed and building applicants are informed. | | |
| | · When possible, utilize underground lines. | WW, WST, T | Н | Staff will encourage underground service with building applicants and power providers. | Cnty Public Works | Local utility companies | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | All new services are reviewed. | | |
| 1.2.3 | Encourage cooperative agreements between utility companies to help restore infrastructure post-event. | WW, WST, T | Н | Electric Co-ops are part of the EOC/LEPC during a disaster. The LEOP of the Co-ops does include immediate actions taken to restore power to needed facilities. | EMC | Local utility companies | Local funding | Mod | I/C, PD,LF, EMCC | 2015 | Local planning/self review | | |
| 1.2.4 | Encourage purchase of drought insurance for agricultural community. | DR | М | Draft proclamation encouraging drought insurance for agricommunities. | CntyCom | USDA insurance agents, University Outreach & Extension | Internal | Mod | PD | 2012 | Review current properties for compliance. | | |
| 1.2.5 | Encourage property owners to purchase earthquake insurance. | EQ | М | Will insert a short summary on earthquake preparedeness in the quarterly newsletter after Mayor attends earthquake training; will include an encouragement to purchase earthquake insurance in this article. | Mayor/City Clerk | | Internal | Min | PD | 2011 | Public has been informed of the importance and availability of earthquake insurance. | | |

| Figure 4 | Figure 4.4.6c Mitigation Actions for St. Martins | | | | | | | | | | | | |
|----------|---|----------------------------------|----------|--|---|--|---|-------------------|---------------------------------|---------------------------------|---|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| 1.2.6 | Encourage owners of homes and businesses to consider the use of fire resistant shingles in new construction and re-roofing projects. | WF | M | Draft/provide information to be distributed to home and business owners, as well as building applicants, in regard to fire resistant roofing. | JC/Cnty Planning | Local contractors, home improvement stores | Internal | Mod | I/C, PD,LF | Ongoing | Recommend resistant materials to building applicants. | | |
| | Maintain bridge and culvert standards to prevent debris from clogging waterways. | FL | Н | Public Works will clean out the culverts as necessary; there are no bridges in town. | St. Martins Public Works | | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Culverts are clear and water can flow freely. | | |
| 2.2.1 | Adopt and enforce appropriate model building codes and national engineering standards. | EQ, WF, WST, T, HST | Н | St. Martins adopts the County building codes; building code inspections are done by County Public Works; inspections are forwarded to City of St. Martins and the Zoning Inspectors and City Clerk approve the building permits. | City Council/Mayor, Planning & Zoning, City Clerk | County Public Works | Internal/buildi ng owners pay for inspections | Min | I/C, PD,LF, EMCC | Ongoing | Building codes are appropriate and enforced. | | |
| | Brace/reinforce items within critical infrastructure. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations | | |
| 3.1.2 | · Brace high value equipment. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations | | |
| | · Brace equipment that could fall causing injury or block evacuation routes. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations | | |
| 3.1.3 | Encourage the bracing of high value equipment such as furnaces, water heaters, and above ground tanks. | EQ, W, T | Н | Will write an article for the quarterly newsletter encouraging homeowners/businesses to secure above ground tanks. | City Clerk | Home- and business- owners | Internal | Min | I/C, PD,LF, EMCC | 2011 | Article is published | | |
| 3.1.4 | Provide backup power to all critical infrastructure such as police, fire, hospitals, local government buildings, and designated shelters. | EQ, HT, WW, WF, WST, | Н | Cole County has purchased a large portable generator for backup to some facilities. JCPD has a backup system in place, CCSO as well. Continue to ask shelter sites to provide backup or transfer switches. | ЕМС | Mass Care Coodinator;Re d Cross | City/County Gov'ts | Sig | I/C, PD,LF, EMCC | 2015 | Local review | | |

| Figure 4 | Figure 4.4.6d Mitigation Actions for St. Martins | | | | | | | | | | | | |
|----------|---|---|----------|--|---------------------------------|--------------------------------------|---------------------------------|-------------------|---------------------------------|---------------------------------|---|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| 3.1.5 | Encourage removal of vegetation and combustible materials around homes, businesses, and critical infrastructure. | WF | Н | Staff will prepare information to educate the public in regard to removal of combustible materials | Cnty/JC Public Works | Fire districts and departments | Internal | Min | I/C, PD,LF, EMCC | Ongoing | Inform the public of benefits of removal of unnecessary materials | | |
| 3.1.6 | Evaluate access problems to critical infrastructure in the event of a flood. | FL | Н | Continue to work with County/City public works. | Emerg Mgmt | CntyCom, local gov councils | Local | Mod | I/C, PD,LF, EMCC | 2015 | LEOP | | |
| 3.2.1 | Continue to alert the public of hazardous weather via early warning sirens/electronic notification system or establish a mass notification system where needed. | WST, T | Н | Region West Fire District sets off the warning siren in St. Martins. | Region West Fire District | | No cost to St. Martins | Min | I/C, PD,LF, EMCC | Ongoing | Public is alerted of hazardous weather. | | |
| 3.2.3 | Ensure evacuation routes are adequate in the event of a major hazard. If needed, pursue methods for improving capacity. | FL | Н | Continue to work with County/City public works. | EMC | Public Works (County, JC) | Local | Sig | I/C, PD,LF, EMCC | 2015 | LEOP | | |
| 3.2.4 | Establish formal agreements with appropriate shelter locations throughout Cole County. | EQ, HT, FL, WW, WST, T, HST | | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | EMC | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | |

| Figure 4.4.6e Mitigation Actions for St. Martins | | | | | | | | | | | | |
|--|---|--|----------|---|--|--|---------------------------------|-------------------|---------------------------------|---------------------------------|---|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | |
| | Encourage development of formal agreements with shelters that have alternative heating sources. | | | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | |
| | Identify vulnerable populations needing potential relocation to shelter in event of power outage. | WW | Н | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | EMC | American Red Cross/ County Health Dept. | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | |
| | · Identify potential transportation. | | | Ensure transportation with JC Jefftran and local school bus vendors. | | American Red Cross/ Jefferson City Community Development | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review/LEOP | |
| 3.2.8 | Encourage the construction of tornado safe rooms. | WST, T | Н | Will look into the possibility of building a tornado safe room - land needed, grants available, etc. Will also look into possible safe areas in current buildings for use during tornadoes. | Mayor/City Council | | Internal/Grant s | Sig | I/C, PD,LF, EMCC | 2015 | Tornado safe room built and/or safe areas in buildings designated. | |
| 4.0.1 | Develop public education hazard awareness program. | DF, DR, EQ, HT, FL, SK, LF, WW, WF, WND, T, HST | Н | Continue to provde updated emergency education messages to the public, schools neighborhood watch programs, etc. | Emer Mgmt, County Planning, County and JC Public Works | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | local review | |
| | Establish educational materials for public regarding potential problems an earthquake in Missouri could cause. | EQ | Н | Continue to provide updated materials through FEMA/SEMA. | EMC | Univ of MO Outreach and Extension | | Mod | I/C, PD,LF, EMCC | 2015 | local review | |

| Figure 4.4.6f Mitigation Actions for St. Martins | | | | | | | | | | | |
|--|---|----------------------|----------|--|---------------------------|---|--|-------------------|---------------------------------|---------------------------------|-------------------------------------|
| Action # | Mitigation Action | Hazards Addressed | Priority | | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion |
| 4.0.4 | Encourage schools to include earthquake safety programs in with other emergency preparedness training. | EQ | Н | Ensure schools include emergency messages and drills. | EMC | Local school districts | local | Mod | I/C, PD,LF, EMCC | 2015 | Local Review |
| | Provide public education materials before storm events to inform people of the danger of icy roads. | | Н | Continue to provide emergency messages through media contacts. | | 911 communciatio ns, County/City public works/ JCPD, CCSO | local | Mod | I/C, PD,LF, EMCC | 2015 | Local review |
| 4.0.5 | Have emergency supplies available at homes. | WW | Н | Continue providing community emergency programs, CERT. | EMC | CERT Team (Community Emergency Response Team) Citizen Corps Coordinator | Local/Homela nd Security grant funding | Mod | I/C, PD,LF, EMCC | 2015 | Local review |
| | Provide education to homeowners living near large fuel areas (forest, grasslands, etc.) on what they can do to minimize risk. | WF | Н | Cotinue to provide wildfire messages, burn ban announcements and statewide Firewise program. | EMC | Fire districts and departments | local | Mod | I/C, PD,LF, EMCC | 2015 | Local review/ FD education programs |

| Figure 4 | Figure 4.4.6g Mitigation Actions for St. Martins | | | | | | | | | | | | |
|----------|--|----------------------|----------|---|---|--|---------------------------------|-------------------|---------------------------------|---------------------------------|---|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| | Adopt procedures for review of subdivision plans that minimize flood problems. | | Н | Will be working with Cole County Public Works to review subdivision plans and look at potential flooding issues. | | County Public Works | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Potential flooding problems are addressed in review of subdivision plans. | | |
| 5.0.3 | Encourage developer to include adequate storm water retention facilities on new builds. | FL | Н | Will work with Cole County Public Works on how best to approach this issue. | St. Martins Planning and Zoning | County Public Works | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Developers are encouraged to deal with storm water issues when designing projects. | | |
| | · Establish lowest floor elevation for new construction at 1' above Base Flood Elevation (BFE). | | Н | This will be done if decision is made to join the NFIP. | | | Internal | Min | I/C, PD,LF, EMCC | 2012 | Lowest floor elevations are established for flood plain construction. | | |
| 5.0.4 | Require developers to build in accordance with locally accepted codes. | EQ | Н | Staff currently requires all building development to be built to adopted building codes. | Cnty/JC Public Works and Planning | Local contractors, CntyCom, local gov councils | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Inspect development/buildi ngs for current code compliance | | |
| 5.0.5 | Encourage the retrofitting of structures to new earthquake safety standards when undergoing renovations/ improvements. | EQ | Н | Draft/prepare educational materials for public in regard to retrofitting | Cnty/JC Public Works and Planning | Local contractors, CntyCom, local gov councils | Internal/SEM A grants | Sig | I/C, PD,LF, EMCC | Ongoing | Distribute information to local centers of information/media outlets | | |
| | Maintain resources for public on retrofitting and protection techniques. | FL | Н | Supply needed international Code requirements. | EMC | Cnty/local gov public works | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local adoptions of codes | | |

Changes

1.1.3 Cost changed from Significant to Moderate because this would be covered in the internal budget.

- 1.1.13 Cost changed from Significant to Moderate because this would be covered in the internal budget.
- 1.2.5 Cost changed from Moderate to Minimal because the only cost of this will be the time spent writing an article for the quarterly newsletter.
- 2.2.1 Cost changed from Moderate to Minimal because the building owners pay for the cost of the inspections so the cost to St. Martins is minimal.
- 3.1.2 Cost changed from Moderate to Minimal because the only cost of this will be the time spent writing an article for the quarterly newsletter.
- 3.2.1 Cost changed from Significant to Minimal because there is no cost to St. Martins for this.
- 5.1.3 Cost changed from Significant to Moderate because any work done on encouraging this would be coverd in the annual budget.

4.4.7 St. Thomas

| Fig. 4.4. | Fig. 4.4.7a Mitigation Actions for St. Thomas | | | | | | | | | | | | |
|-----------|--|-----------------------------------|----------|---|---------------------------------|--|---------------------------------|-------------------|---------------------------------|---------------------------------|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| 1.1.1 | Revise and update regulatory floodplain maps. | FL | Н | Present any future maps to County Commission for adoption. | SEMA, FEMA, MODNR | Cnty/JC Planning, EOD | Internal | Mod | I/C, PD,LF, EMCC | 2012 | Court order by County Commission accepting new maps. | | |
| 1.1.7 | Continue development of storm water programs and ensure adequate maintenance of drainage systems. | FL | L | Will monitor drainage systems. | Mayor | | City general revenue | Mod | I/C, PD,LF, EMCC | Ongoing | Inspections are completed two times per year. | | |
| 1.1.9 | Have alternate power supplies for fueling emergency vehicles. | EQ, HT, WW, WF, WST,T | Н | Cole County Public Works has installed a Generator Backup system for the entire complex. JC has a backup system in place. | EMC | Local police, sheriff, fire depts, ambulance districts | Local funding | Sig | I/C, PD,LF, EMCC | 2015 | Local review | | |
| 1.1.13 | Encourage appropriate County and City staff to continually update their knowledge base regarding earthquake safety. | EQ | Н | Will attend training sessions. | Mayor | Emerg Mgmt | City general revenue | Mod | I/C, PD,LF, EMCC | Ongoing | Trainings attended. | | |
| 1.1.14 | Ensure the ability to respond to a severe winter weather event through advance preparation of maintenance areas and acquisition of stocks of chemicals and fuel appropriate for the length of a typical event. | ww | Н | Team with Cole County Public Works | Cole County Public Works | City of St. Thomas (contracts with County) | City general revenue | Mod | I/C, PD,LF, EMCC | Ongoing | County Public Works is ready to respond when a severe winter weather event occurs. | | |

| Fig. 4.4. | 7b | | | Mitigation Ac | tions for St. Th | nomas | | | | | |
|-----------|--|------------------------------|----------|---|--|--|---------------------------------|-------------------|---------------------------------|---------------------------------|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion |
| | Encourage utility companies to continue to maintain power line right of way. | WW, WST, T | Н | Staff will observe and report possible power line right of way that requires maintenance. | Cnty Public Works | Local utility companies | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Observable power line right of ways are reviewed. |
| 1.2.2 | · Provide public education regarding the best tree species to plant near utility lines. | WW, WST, T | Н | Staff will inform all building applicants of proper tree plantings in proximity to utility lines. | Cnty Public Works | Local utility companies | Internal | Min | PD | Ongoing | Properties are reviewed and building applicants are informed. |
| | · When possible, utilize underground lines. | WW, WST, T | Н | Staff will encourage underground service with building applicants and power providers. | Cnty Public Works | Local utility companies | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | All new services are reviewed. |
| 1.2.3 | Encourage cooperative agreements between utility companies to help restore infrastructure post-event. | WW, WST, T | Н | Electric Co-ops are part of the EOC/LEPC during a disaster. The LEOP of the Co-ops does include immediate actions taken to restore power to needed facilitites. | EMC | Local utility companies | Local funding | Mod | I/C, PD,LF, EMCC | 2015 | Local planning/self review |
| 1.2.4 | Encourage purchase of drought insurance for agricultural community. | DR | М | Draft proclamation encouraging drought insurance for agricommunities. | CntyCom | USDA insurance agents, University Outreach & Extension | Internal | Mod | PD | 2012 | Review current properties for compliance. |
| | Encourage owners of homes and businesses to consider the use of fire resistant shingles in new construction and re-roofing projects. | WF | M | Draft/provide information to be distributed to home and business owners, as well as building applicants, in regard to fire resistant roofing. | JC/Cnty Planning | Local contractors, home improvement stores | Internal | Mod | I/C, PD,LF | Ongoing | Recommend resistant materials to building applicants. |
| 2.1.4 | Maintain bridge and culvert standards to prevent debris from clogging waterways. | FL | L | Inspect culverts annually. | Mayor | | City general revenue | Mod | I/C, PD,LF, EMCC | Ongoing | Inspections are completed two times per year. |
| 2.2.1 | Adopt and enforce appropriate model building codes and national engineering standards. | EQ, WF, WST, T, HST | Н | Team with County | City Council/County Public Works | | No cost to St. Thomas | Min | I/C, PD,LF, EMCC | Ongoing | Codes are adopted and enforced. |

| Fig. 4.4. | Fig. 4.4.7c Mitigation Actions for St. Thomas | | | | | | | | | | | | |
|-----------|---|----------------------------------|----------|--|---|---|---------------------------------|-------------------|---------------------------------|---------------------------------|---|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| | Brace/reinforce items within critical infrastructure. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations | | |
| 3.1.2 | · Brace high value equipment. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations | | |
| | Brace equipment that could fall causing injury or block evacuation routes. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations | | |
| 3.1.4 | Provide backup power to all critical infrastructure such as police, fire, hospitals, local government buildings, and designated shelters. | EQ, HT, WW, WF, WST, | Н | Cole County has purchased a large portable generator for backup to some facilities. JCPD has a backup system in place, CCSO as well. Continue to ask shelter sites to provide backup or transfer switches. | ЕМС | Mass Care Coodinator;Re d Cross | City/County Gov'ts | Sig | I/C, PD,LF, EMCC | 2015 | Local review | | |
| | Encourage removal of vegetation and combustible materials around homes, businesses, and critical infrastructure. | WF | Н | Staff will prepare information to educate the public in regard to removal of combustible materials | Cnty/JC Public Works | Fire districts and departments | Internal | Min | EMCC | Ongoing | Inform the public of benefits of removal of unnecessary materials | | |
| | Evaluate access problems to critical infrastructure in the event of a flood. | FL | Н | Continue to work with County/City public works. | Emerg Mgmt | CntyCom, local gov councils | Local | Mod | I/C, PD,LF, EMCC | 2015 | LEOP | | |
| 3.2.1 | Continue to alert the public of hazardous weather via early warning sirens/electronic notification system or establish a mass notification system where needed. | WST, T | Н | Will check for and apply for grants for siren. | City Council | | Grant | Sig | I/C, PD,LF, EMCC | 2020 | Siren installed and working. | | |
| 3.2.3 | Ensure evacuation routes are adequate in the event of a major hazard. If needed, pursue methods for improving capacity. | FL | Н | Continue to work with County/City public works. | EMC | Public Works (County, JC) | Local | Sig | I/C, PD,LF, EMCC | 2015 | LEOP | | |

| Fig. 4.4. | Mitigation Actions for St. Thomas | | | | | | | | | | | | | |
|-----------|--|---|----------|--|--|--|---------------------------------|-------------------|---------------------------------|---------------------------------|-----------------------------|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | | |
| 3.2.4 | Establish formal agreements with appropriate shelter locations throughout Cole County. | EQ, HT, FL, WW, WST, T, HST | Н | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | EMC | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | | |
| | Encourage development of formal agreements with shelters that have alternative heating sources. | | | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | | |
| | · Identify vulnerable populations needing potential | ww | Н | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | EMC | American Red Cross/ County Health Dept. | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | | |
| | · Identify potential transportation. | | | Ensure transportation with JC Jefftran and local school bus vendors. | | American Red Cross/ Jefferson City Community Development | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review/LEOP | | | |
| 4.0.1 | Develop public education hazard awareness program. | DF, DR, EQ, HT, FL, SK, LF, WW, WF, WND, T, HST | Н | Continue to provde updated emergency education messages to the public, schools neighborhood watch programs, etc. | Emer Mgmt, County Planning, County and JC Public Works | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | local review | | | |
| 4.0.3 | Establish educational materials for public regarding potential problems an earthquake in Missouri could cause. | EQ | Н | Continue to provide updated materials through FEMA/SEMA. | EMC | Univ of MO Outreach and Extension | | Mod | I/C, PD,LF, EMCC | 2015 | local review | | | |

| Fig. 4.4. | Mitigation Actions for St. Thomas | | | | | | | | | | | | | |
|-----------|---|----------------------|----------|--|---|---|--|-------------------|---------------------------------|---------------------------------|--|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | | |
| 4.0.4 | Encourage schools to include earthquake safety programs in with other emergency preparedness training. | EQ | Н | Ensure schools include emergency messages and drills. | EMC | Local school districts | local | Mod | I/C, PD,LF, EMCC | 2015 | Local Review | | | |
| | Provide public education materials before storm events to inform people of the danger of icy roads. | | Н | Continue to provide emergency messages through media contacts. | | 911 communciatio ns, County/City public works/ JCPD, CCSO | local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | | |
| 4.0.5 | Have emergency supplies available at homes. | WW | Н | Continue providing community emergency programs, CERT. | EMC | CERT Team (Community Emergency Response Team) Citizen Corps Coordinator | Local/Homela nd Security grant funding | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | | |
| 4.0.7 | Provide education to homeowners living near large fuel areas (forest, grasslands, etc.) on what they can do to minimize risk. | WF | Н | Cotinue to provide wildfire messages, burn ban announcements and statewide Firewise program. | EMC | Fire districts and departments | local | Mod | I/C, PD,LF, EMCC | 2015 | Local review/ FD education programs | | | |
| 5.0.4 | Require developers to build in accordance with locally accepted codes. | EQ | Н | Staff currently requires all building development to be built to adopted building codes. | Cnty/JC Public Works and Planning | Local contractors, CntyCom, local gov councils | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Inspect development/buildi ngs for current code compliance | | | |
| 5.0.5 | Encourage the retrofitting of structures to new earthquake safety standards when undergoing renovations/ improvements. | EQ | Н | Draft/prepare educational materials for public in regard to retrofitting | Cnty/JC Public Works and Planning | Local contractors, CntyCom, local gov councils | Internal/SEM A grants | Sig | I/C, PD,LF, EMCC | Ongoing | Distribute information to local centers of information/media outlets | | | |
| 5.0.6 | Maintain resources for public on retrofitting and protection techniques. | FL | Н | Supply needed international Code requirements. | EMC | Cnty/local gov public works | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local adoptions of codes | | | |

Changes

- 1.1.7 St. Thomas does not have much drainage or storm water problem as it is located high on a hill. Priority was changed from High to Low because of the lack of any significant issue; projected cost was changed from Significant to Moderate because twice yearly inspections will be covered by the general revenue of the city.
- 2.1.4 Priority was changed from High to Low because of the lack of drainage and storm water problems.
- 2.2.1 Projected cost was changed from a Moderate to Minimal. The City Council adopts the County codes and has an arrangement with the County Public Works Department to do the inspections. There is no cost to St. Thomas because the property owners pay the inspection fees.

4.4.8 Taos

| Figure 4 | ure 4.4.8a Mitigation Actions for Taos | | | | | | | | | | | | |
|----------|--|-----------------------------------|----------|--|---|--|---------------------------------|----------------|---------------------------------|---------------------------------|---|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or 6 Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| 1.1.1 | Revise and update regulatory floodplain maps. | FL | Н | Present any future maps to County Commission for adoption. | SEMA, FEMA, MODNR | Cnty/JC Planning, EOD | Internal | Mod | I/C, PD,LF, EMCC | 2012 | Court order by County Commission accepting new maps. | | |
| 1.1.2 | Encourage participation in the National Flood Insurance Program (NFIP). | FL | Н | The Board of Aldermen will obtain information on participation in the NFIP from SEMA and will discuss participation because recent annexation includes floodplain areas. | Board of Aldermen | SEMA | Internal | Mod | I/C, PD,LF, EMCC | 2012 | Decision is made on participation in NFIP. | | |
| 1.1.3 | Encourage participation in Community Rating System of National Flood Insurance Program (NFIP). | FL | Н | The Board of Aldermen will consider participation in the CRS at the same time as participation in the NFIP is being discussed. | Board of Aldermen | SEMA | Internal | Sig | I/C, PD,LF, EMCC | 2012 | Decision is made on participation in CRS. | | |
| 1.1.4 | Set up centralized, coordinated permitting process to ensure compliance with floodplain regulations. | FL | Н | Look into if decision is made to join the NFIP. | Board of Aldermen | | Internal | Min | I/C, PD,LF, EMCC | 2013 | Permitting process is in place. | | |
| 1.1.9 | Have alternate power supplies for fueling emergency vehicles. | EQ, HT, WW, WF, WST,T | Н | Cole County Public Works has installed a Generator Backup system for the entire complex. JC has a backup system in place. | EMC | Local police, sheriff, fire depts, ambulance districts | Local funding | Sig | I/C, PD,LF, EMCC | 2015 | Local review | | |
| 1.1.14 | Ensure the ability to respond to a severe winter weather event through advance preparation of maintenance areas and acquisition of stocks of chemicals and fuel appropriate for the length of a typical event. | ww | Н | The city contracts with a private contractor to clear the streets during winter storms; the city has also set up a cooperative agreement with the County to act as a backup. | Cnty Public Works, local gov councils | Private contractor | Internal - Road Fund | Mod | I/C, PD,LF, EMCC | Ongoing | Severe winter weather events are responded to in a timely fashion. | | |

| Figure 4 | 1.4.8b | | | Mitigation | Actions for Ta | aos | | | | | |
|----------|--|----------------------|----------|--|---------------------------------|--|---------------------------------|----------------|---------------------------------|---------------------------------|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion |
| | Encourage utility companies to continue to maintain power line right of way. | WW, WST, T | Н | Staff will observe and report possible power line right of way that requires maintenance. | Cnty Public Works | Local utility companies | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Observable power line right of ways are reviewed. |
| 1.2.2 | · Provide public education regarding the best tree species to plant near utility lines. | WW, WST, T | Н | Staff will inform all building applicants of proper tree plantings in proximity to utility lines. | Cnty Public Works | Local utility companies | Internal | Min | PD | Ongoing | Properties are reviewed and building applicants are informed. |
| | · When possible, utilize underground lines. | WW, WST, T | Н | Staff will encourage underground service with building applicants and power providers. | Cnty Public Works | Local utility companies | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | All new services are reviewed. |
| 1.2.3 | Encourage cooperative agreements between utility companies to help restore infrastructure post-event. | WW, WST, T | Н | Electric Co-ops are part of the EOC/LEPC during a disaster. The LEOP of the Co-ops does include immediate actions taken to restore power to needed facilities. | EMC | Local utility companies | Local funding | Mod | I/C, PD,LF, EMCC | 2015 | Local planning/self review |
| 1.2.4 | Encourage purchase of drought insurance for agricultural community. | DR | М | Draft proclamation encouraging drought insurance for agricommunities. | CntyCom | USDA insurance agents, University Outreach & Extension | Internal | Mod | PD | 2012 | Review current properties for compliance. |
| 1.2.6 | Encourage owners of homes and businesses to consider the use of fire resistant shingles in new construction and re-roofing projects. | WF | М | Draft/provide information to be distributed to home and business owners, as well as building applicants, in regard to fire resistant roofing. | JC/Cnty Planning | Local contractors, home improvement stores | Internal | Mod | I/C, PD,LF | Ongoing | Recommend resistant materials to building applicants. |
| 2.1.3 | Consider adopting temporary moratorium on building in flood hazard areas until participation in NFIP is finalized. | FL | Н | The Board of Aldermen will consider this. | Board of Aldermen | | Internal | Min | I/C, PD,LF, EMCC | 2012 | Decision is made on temporary moratorium. |

| Figure 4 | gure 4.4.8c Mitigation Actions for Taos □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ | | | | | | | | | | | | | |
|----------|---|----------------------------------|----------|--|---|---|---|----------------|---------------------------------|---------------------------------|--|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | | |
| 2.1.4 | Maintain bridge and culvert standards to prevent debris from clogging waterways. | FL | Н | One of the Aldermen is responsible for driving the roads and noting potential problems; if clogged culverts were noted, a private contractor would be hired to clean them out. | Board of Aldermen | Private contractor | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Water flows freely in waterways. | | | |
| 2.2.1 | Adopt and enforce appropriate model building codes and national engineering standards. | EQ, WF, WST, T, HST | Н | Taos adopts the County codes and the County Public Works do the building inspections. | Board of Aldermen | County Public Works | Building owners pay for inspections | Min | I/C, PD,LF, EMCC | Ongoing | Codes are appropriate and enforced. | | | |
| 2.2.2 | Encourage appropriate land use development downstream from dams. | DF | Н | The Board of Aldermen will discuss this issue. | Board of Aldermen | | Internal | Min | I/C, PD,LF, EMCC | 2015 | The public and developers are made aware of potential areas of inundation from dams. | | | |
| | Brace/reinforce items within critical infrastructure. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations | | | |
| 3.1.2 | Brace high value equipment. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations | | | |
| | · Brace equipment that could fall causing injury or block evacuation routes. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations | | | |
| 3.1.4 | Provide backup power to all critical infrastructure such as police, fire, hospitals, local government buildings, and designated shelters. | EQ, HT, WW, WF, WST, | Н | Cole County has purchased a large portable generator for backup to some facilities. JCPD has a backup system in place, CCSO as well. Continue to ask shelter sites to provide backup or transfer switches. | EMC | Mass Care Coodinator;Re d Cross | City/County Gov'ts | Sig | I/C, PD,LF, EMCC | 2015 | Local review | | | |

| Figure 4 | igure 4.4.8d Mitigation Actions for Taos | | | | | | | | | | | | |
|----------|---|---|----------|---|---------------------------------|--------------------------------------|---------------------------------|----------------|---------------------------------|---------------------------------|---|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| | Encourage removal of vegetation and combustible materials around homes, businesses, and critical infrastructure. | WF | Н | Staff will prepare information to educate the public in regard to removal of combustible materials | Cnty/JC Public Works | Fire districts and departments | Internal | Min | I/C, PD,LF, EMCC | Ongoing | Inform the public of benefits of removal of unnecessary materials | | |
| 3.1.6 | Evaluate access problems to critical infrastructure in the event of a flood. | FL | Н | Continue to work with County/City public works. | Emerg Mgmt | CntyCom, local gov councils | Local | Mod | I/C, PD,LF, EMCC | 2015 | LEOP | | |
| 3.2.1 | Continue to alert the public of hazardous weather via early warning sirens/electronic notification system or establish a mass notification system where needed. | WST, T | Н | Taos does not currently have an early warning siren. The city is currently looking into contracting with a private contractor for this. | Board of Aldermen | Private contractor | General Revenue or Grant | Sig | I/C, PD,LF, EMCC | 2013 | Early warning siren in place and operating. | | |
| 3.2.3 | Ensure evacuation routes are adequate in the event of a major hazard. If needed, pursue methods for improving capacity. | FL | Н | Continue to work with County/City public works. | EMC | Public Works (County, JC) | Local | Sig | I/C, PD,LF, EMCC | 2015 | LEOP | | |
| 3.2.4 | Establish formal agreements with appropriate shelter locations throughout Cole County. | EQ, HT, FL, WW, WST, T, HST | Н | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | ЕМС | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | |

| Figure 4 | 4.4.8e | | | Mitigation | Actions for T | aos | | | | | |
|----------|--|--|----------|--|---------------------------------|--|---------------------------------|----------------|---------------------------------|---------------------------------|-----------------------------|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion |
| | Encourage development of formal agreements with shelters that have alternative heating sources. | | | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review |
| | Identify vulnerable populations needing potential relocation to shelter in event of power outage. | WW | Н | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | EMC | American Red Cross/ County Health Dept. | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review |
| | Identify potential transportation. | | | Ensure transportation with JC Jefftran and local school bus vendors. | | American Red Cross/ Jefferson City Community Development | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review/LEOP |
| | Assist owners of regulated high hazard dams with development of the Emergency Action Plans (EAPs) required in conjunction with the inundation studies being conducted. | DF | Н | Continue to work with Department of Natural Resources, engineers and state regulations. | Dam owners | EMC | Local owners | Mod | I/C, PD,LF, EMCC | 2015 | Completed plans |
| 4.0.1 | Develop public education hazard awareness program. | DF, DR, EQ, HT, FL, SK, LF, WW, WF, WND, T, HST | Н | Continue to provde updated emergency education messages to the public, schools neighborhood watch programs, etc. | Emer Mgmt | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | local review |

| Figure 4 | 4.4.8f | | | Mitigation | Actions for T | aos | | | | | |
|----------|---|----------------------|----------|---|---------------------------------|---|--|-------------------|---------------------------------|---------------------------------|---|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion |
| 4.0.2 | Establish flood warning signs at known flooding locations. | FL | Н | The known flooding locations are in currently annexed areas and flood warning signs have already been posted by the County. These signs will be maintained by the city. | Board of Aldermen | | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Known flooding locations are posted with warning signs. |
| 4.0.3 | Establish educational materials for public regarding potential problems an earthquake in Missouri could cause. | EQ | Н | Continue to provide updated materials through FEMA/SEMA. | EMC | Univ of MO Outreach and Extension | | Mod | I/C, PD,LF, EMCC | 2015 | local review |
| 4.0.4 | Encourage schools to include earthquake safety programs in with other emergency preparedness training. | EQ | Н | Ensure schools include emergency messages and drills. | EMC | Local school districts | local | Mod | I/C, PD,LF, EMCC | 2015 | Local Review |
| | Provide public education materials before storm events to inform people of the danger of icy roads. | | Н | Continue to provide emergency messages through media contacts. | | 911 communciatio ns, County/City public works/ JCPD, CCSO | local | Mod | I/C, PD,LF, EMCC | 2015 | Local review |
| 4.0.5 | Have emergency supplies available at homes. | WW | Н | Continue providing community emergency programs, CERT. | ЕМС | CERT Team (Community Emergency Response Team) Citizen Corps Coordinator | Local/Homela nd Security grant funding | Mod | I/C, PD,LF, EMCC | 2015 | Local review |
| | Provide education to homeowners living near large fuel areas (forest, grasslands, etc.) on what they can do to minimize risk. | WF | Н | Cotinue to provide wildfire messages, burn ban announcements and statewide Firewise program. | ЕМС | Fire districts and departments | local | Mod | I/C, PD,LF, EMCC | 2015 | Local review/ FD education programs |

| Figure 4 | 4.4.8g | | | | | | | | | | |
|----------|--|----------------------|----------|--|---|--|---------------------------------|-------------------|---------------------------------|---------------------------------|--|
| | | | 1 | Mitigation | Actions for Ta | aos | | | 1 | 1 | |
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion |
| 5.0.4 | Require developers to build in accordance with locally accepted codes. | EQ | Н | Staff currently requires all building development to be built to adopted building codes. | Cnty/JC Public Works and Planning | Local contractors, CntyCom, local gov councils | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Inspect development/buildi ngs for current code compliance |
| 5.0.5 | Encourage the retrofitting of structures to new earthquake safety standards when undergoing renovations/ improvements. | EQ | Н | Draft/prepare educational materials for public in regard to retrofitting | Cnty/JC Public Works and Planning | Local contractors, CntyCom, local gov councils | Internal/SEM A grants | Sig | I/C, PD,LF, EMCC | Ongoing | Distribute information to local centers of information/media outlets |
| | Maintain resources for public on retrofitting and protection techniques. | FL | Н | Supply needed international Code requirements. | EMC | Cnty/local gov public works | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local adoptions of codes |

Changes

2.2.1 Projected cost changed from Moderate to Minimal because the city adopts the County codes and has an arrangement with the County Public Works Dept. to do the inspections. There is no cost to the city as the property owners pay the inspection fees.

4.4.9 Wardsville

| Figure 4 | Figure 4.4.9a Mitigation Actions for Wardsville | | | | | | | | | | | | | |
|----------|---|-----------------------------------|----------|---|---------------------------|--|---|-------------------|---------------------------------|---------------------------------|--|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | | |
| 1.1.1 | Revise and update regulatory floodplain maps. | FL | Н | Present any future maps to County Commission for adoption. | SEMA, FEMA, MODNR | Cnty/JC Planning, EOD | Internal | Mod | I/C, PD,LF, EMCC | 2012 | Court order by County Commission accepting new maps. | | | |
| 1.1.3 | Encourage participation in Community Rating System of National Flood Insurance Program (NFIP). | FL | M | NFIP participant. Defer current involvement with the Community Rating System | Board of Trustees | N/A | Internal Budget | Sig | I/C, PD,LF, EMCC | 5+ yrs | Seek Mid-MO RPC and Engineering Firm assistance when staff time and funding become available | | | |
| 1.1.7 | Continue development of storm water programs and ensure adequate maintenance of drainage systems. | FL | Н | Minimal Storm Water regulation at present. Anticipate more detailed Storm Water policy will be required, post 2010 Census, for new const. and for retro-fitting existing infrastructure | Board of Trustees | County | FEMA, SEMA Grants; DNR Grants; Internal Budget | Sig | I/C, PD,LF, EMCC | 3-5 years | Amend Code; Implement; Acquire Funding | | | |
| 1.1.9 | Have alternate power supplies for fueling emergency vehicles. | EQ, HT, WW, WF, WST,T | | Cole County Public Works has installed a Generator Backup system for the entire complex. JC has a backup system in place. | EMC | Local police, sheriff, fire depts, ambulance districts | Local funding | Sig | I/C, PD,LF, EMCC | 2015 | Local review | | | |
| 1.1.11 | Encourage all water providers to install electric transfer switches and/or backup generators. | EQ, HT, WW, WF, WST, | Н | Transfer switches and generators will be in place and operational by 12/2010 | Board of Trustees | N/A | ARRA Funds; DNR Grant; DED Grant; Internal Budget | Sig | I/C, PD,LF, EMCC | Dec. 2010 | Equipment in place and operational | | | |

| Figure 4 | Mitigation Actions for Wardsville | | | | | | | | | | | | |
|----------|--|----------------------|----------|--|---------------------------------|---|---|-------------------|---------------------------------|-------------------------------------|---|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| 1.1.12 | Encourage public and private water providers to develop distribution systems so that they interconnect with established distribution systems. | DR, WF | Н | Village water service wishes to remain independent. Neighboring water district's lines are nearby; which would allow for easy interconnection. | Board of Trustees | County Water Districts #2 & #4, DNR | FEMA, SEMA Grants; DNR Grants; Internal Budget | Sig | I/C, PD,LF, EMCC | 5+ years | Federal/State regulation change or mandate & partnership agreements with neighboring water districts | | |
| 1.1.13 | Encourage appropriate County and City staff to continually update their knowledge base regarding earthquake safety. | EQ | Н | Inform Village staff, boards, committees of opportunities to secure training | Board of Trustees | FEMA, SEMA, County Emerg Mgmt | Internal Budget | Mod | I/C, PD,LF, EMCC | 1-2 years | Attendance and/or certifications acquired | | |
| 1.1.14 | Ensure the ability to respond to a severe winter weather event through advance preparation of maintenance areas and acquisition of stocks of chemicals and fuel appropriate for the length of a typical event. | ww | Н | Actions already in place | Board of Trustees | County | Internal Budget | Mod | I/C, PD,LF, EMCC | Fall & Winter of each year | Follow up with the operator pre & post event to insure supplies are on hand and the equipment fully operational | | |
| | Encourage utility companies to continue to maintain power line right of way. | WW, WST, T | Н | Staff will observe and report possible power line right of way that requires maintenance. | Cnty Public Works | Local utility companies | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Observable power line right of ways are reviewed. | | |
| 1.2.2 | · Provide public education regarding the best tree species to plant near utility lines. | WW, WST, T | Н | Staff will inform all building applicants of proper tree plantings in proximity to utility lines. | Cnty Public Works | Local utility companies | Internal | Min | PD | Ongoing | Properties are reviewed and building applicants are informed. | | |
| | · When possible, utilize underground lines. | WW, WST, T | Н | Staff will encourage underground service with building applicants and power providers. | Cnty Public Works | Local utility companies | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | All new services are reviewed. | | |

| Figure 4 | igure 4.4.9c Mitigation Actions for Wardsville | | | | | | | | | | | | |
|----------|--|----------------------|----------|--|---------------------------------|--|---------------------------------|-------------------|---------------------------------|---------------------------------|---|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| 1.2.3 | Encourage cooperative agreements between utility companies to help restore infrastructure post-event. | WW, WST, T | Н | Electric Co-ops are part of the EOC/LEPC during a disaster. The LEOP of the Co-ops does include immediate actions taken to restore power to needed facilities. | EMC | Local utility companies | Local funding | Mod | I/C, PD,LF, EMCC | 2015 | Local planning/self review | | |
| 1.2.4 | Encourage purchase of drought insurance for agricultural community. | DR | М | Draft proclamation encouraging drought insurance for agricommunities. | CntyCom | USDA insurance agents, University Outreach & Extension | Internal | Mod | PD | 2012 | Review current properties for compliance. | | |
| 1.2.5 | Encourage property owners to purchase earthquake insurance. | EQ | M | Discuss during Board Regular Session and notation within a newsletter | Board of Trustees | Realtors, Insurance Companies | Internal Budget | Mod | PD | 1 year | Documentation within the Board Minutes; Notation within a newsletter | | |
| 1.2.6 | Encourage owners of homes and businesses to consider the use of fire resistant shingles in new construction and re-roofing projects. | WF | M | Draft/provide information to be distributed to home and business owners, as well as building applicants, in regard to fire resistant roofing. | JC/Cnty Planning | Local contractors, home improvement stores | Internal | Mod | I/C, PD,LF | Ongoing | Recommend resistant materials to building applicants. | | |

| Figure 4 | 4.4.9d | | | Mitigation Ac | tions for War | dsville | | | | | |
|----------|---|---------------------------------|----------|---|---------------------------------|---------------------------------|---|-------------------|---------------------------------|---------------------------------|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion |
| | Review and update flood damage prevention ordinance to ensure maximum protection from flood hazard events. | FL | Н | Staff will monitor & propose any necessary ordinance updates. | Cnty/JC Planning | CntyCom, JC Council | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | All codes are reviewed & updated as necessary. |
| 2.1.1 | Consider adopting temporary moratorium on building in flood hazard areas until ordinance is revised. | FL | М | Staff will prepare floodplain temporary moratorium regulations for adoption | Cnty/JC Planning | CntyCom, JC Council | Internal | Mod | I/C, PD,LF, EMCC | 2013 | Review and adoption of proposed legislations |
| | Advise/assist property owners in retrofitting their homes and businesses to better respond to floods. | FL | Н | Staff will provide information for home & business owners for retrofitting structures | Cnty/JC Planning | CntyCom, JC Council | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Review current regulations and materials for retrofitting. |
| 2.1.2 | Continue to enforce flood damage prevention/ floodplain management ordinances in compliance with NFIP requirements. | FL, LF | Н | Review NFIP requirements and review/amend existing Village code | Board of Trustees | FEMA, SEMA, County | Internal Budget | Mod | I/C, PD,LF, EMCC | 1-2 Years | Code revision and implementation |
| 2.1.4 | Maintain bridge and culvert standards to prevent debris from clogging waterways. | FL | Н | Actions already in place | Board of Trustees | County | Internal Budget | Mod | I/C, PD,LF, EMCC | Yearly | Follow up with Cole County Public Works CCPW pre/post weather event. Village to assist w/ monitoring |
| 2.1.6 | Adopt regulations that preserve riparian corridors in developments. | FL | M | Review existing code, existing development and planned development | Board of Trustees | DNR, Conservation, County | FEMA, SEMA Grants; DNR Grants; Internal Budget | Min | I/C, PD | 1-3 years | Code revision and implementation |
| 2.2.1 | Adopt and enforce appropriate model building codes and national engineering standards. | EQ, WF, WST, T, HST | Н | Review existing code; amending where necessary | Board of Trustees | County, Local Contractors | Internal Budget | Mod | I/C, PD,LF, EMCC | 1-3 years | Code revision and implementation |

| Figure 4 | 4.4.9e | | | Mitigation Ac | tions for Ward | Isville | | | | | |
|----------|---|----------------------------------|----------|--|---|---|---|-------------------|---------------------------------|---------------------------------|---|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion |
| 2.2.2 | Encourage appropriate land use development downstream from dams. | DF | Н | Discuss during Board Regular Session and notation within a newsletter | Board of Trustees | FEMA, SEMA, County | Internal Budget | Min | I/C, PD,LF, EMCC | 1 year | Documentation within the Board Minutes; Notation within a newsletter |
| 3.1.1 | Mitigate the effects of flooding on public infrastructure. | FL | Н | Review existing infrastructure currently within the flood plain. Develop a plan for protecting or relocating that infrastructure | Board of Trustees | FEMA, SEMA, County | FEMA, SEMA Grants; DNR Grants; Internal Budget | Sig | I/C, PD,LF, EMCC | 5+ Years | Planned Development |
| | Brace/reinforce items within critical infrastructure. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations |
| 3.1.2 | Brace high value equipment. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations |
| | Brace equipment that could fall causing injury or block evacuation routes. | EQ | Н | Staff will draft model regulations | Cnty/JC Public Works and Planning | Cnty/JC Public Works and Planning | Internal | Sig | I/C, PD,LF, EMCC | Ongoing | Adopt regulations |
| 3.1.3 | Encourage the bracing of high value equipment such as furnaces, water heaters, and above ground tanks. | EQ, W, | Н | Discuss during Board Regular Session and notation within a newsletter; code revision likely | Board of Trustees | FEMA, SEMA, County | Internal Budget | Sig | I/C, PD,LF, EMCC | 1 year | Documentation within the Board Minutes; Notation within a newsletter; code revision |
| 3.1.4 | Provide backup power to all critical infrastructure such as police, fire, hospitals, local government buildings, and designated shelters. | EQ, HT, WW, WF, WST, | Н | Cole County has purchased a large portable generator for backup to some facilities. JCPD has a backup system in place, CCSO as well. Continue to ask shelter sites to provide backup or transfer switches. | ЕМС | Mass Care Coodinator;Re d Cross | City/County Gov'ts | Sig | I/C, PD,LF, EMCC | 2015 | Local review |

| Figure 4 | Mitigation Actions for Wardsville | | | | | | | | | | | | | |
|----------|---|---|----------|--|---------------------------------|--|--|-------------------|---------------------------------|---------------------------------|---|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | | |
| 3.1.5 | Encourage removal of vegetation and combustible materials around homes, businesses, and critical infrastructure. | WF | Н | Staff will prepare information to educate the public in regard to removal of combustible materials | Cnty/JC Public Works | Fire districts and departments | Internal | Min | I/C, PD,LF, EMCC | Ongoing | Inform the public of benefits of removal of unnecessary materials | | | |
| 3.1.6 | Evaluate access problems to critical infrastructure in the event of a flood. | FL | Н | Continue to work with County/City public works. | Emerg Mgmt | CntyCom, local gov councils | Local | Mod | I/C, PD,LF, EMCC | 2015 | LEOP | | | |
| 3.2.1 | Continue to alert the public of hazardous weather via early warning sirens/electronic notification system or establish a mass notification system where needed. | WST, T | Н | Discuss/review options for acquiring an Early Warning System; secure bids; secure funding | Board of Trustees | FEMA, SEMA, County Emerg Mgmt | FEMA, SEMA Grants; Internal Budget | Sig | I/C, PD,LF, EMCC | 5+ years | Planned Development | | | |
| 3.2.3 | Ensure evacuation routes are adequate in the event of a major hazard. If needed, pursue methods for improving capacity. | FL | Н | Continue to work with County/City public works. | EMC | Public Works (County, JC) | Local | Sig | I/C, PD,LF, EMCC | 2015 | LEOP | | | |
| 3.2.4 | Establish formal agreements with appropriate shelter locations throughout Cole County. | EQ, HT, FL, WW, WST, T, HST | Н | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | ЕМС | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | | |

| Figure 4 | Mitigation Actions for Wardsville | | | | | | | | | | | | |
|----------|--|---------------------------|----------|--|---------------------------------|--|--|-------------------|---------------------------------|---------------------------------|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| | Encourage development of formal agreements with shelters that have alternative heating sources. | | | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | |
| 3.2.5 | Identify vulnerable populations needing potential relocation to shelter in event of power outage. | WW | Н | Shelter agreements are updated with the Mass Care Coordinator and Red Cross. | EMC | American Red Cross/ County Health Dept. | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review | | |
| | · Identify potential transportation. | | | Ensure transportation with JC Jefftran and local school bus vendors. | | American Red Cross/ Jefferson City Community Development | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local review/LEOP | | |
| 3.2.6 | Establish and maintain a system of temporary alternative placement sites ("safe houses") for emergency evacuation and shelter of school populations. | EQ, HT, WF, WST, | Н | Meet with all parties involved to make sure everyone understands their role/expectations | County Emerg Mgmt | Local | FEMA, SEMA Grants; Internal Budget | Mod | I/C, PD,LF, EMCC | 1-3 years | Plans reviewed with all involved parties; implemented | | |
| 3.2.8 | Encourage the construction of tornado safe rooms. | WST, T | Н | Meet with Community, School, Business, Church Leaders to determine need; secure funding | County Emerg Mgmt | Local Councils, Schools, Business', Church | FEMA, SEMA Grants; Internal Budget | Sig | I/C, PD,LF, EMCC | 5+ years | Planned Development | | |

| Figure 4 | 4.4.9h | | | Mitigation Action | ns for Wardsvi | ille | | | | | |
|----------|---|--|----------|--|--|---|---------------------------------|-------------------|---------------------------------|---------------------------------|-----------------------------|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion |
| 4.0.1 | Develop public education hazard awareness program. | DF, DR, EQ, HT, FL, SK, LF, WW, WF, WND, T, HST | Н | Continue to provde updated emergency education messages to the public, schools neighborhood watch programs, etc. | Emer Mgmt, County Planning, County and JC Public Works | American Red Cross | Local | Mod | I/C, PD,LF, EMCC | 2015 | local review |
| 4.0.2 | Establish flood warning signs at known flooding locations. | FL | Н | Village Board communicates need to or seeks professional guidance and assistance from Cole County Public Works CCPW | Board of Trustees | County | Internal Budget | Mod | I/C, PD,LF, EMCC | Yearly | Signs in place |
| 4.0.3 | Establish educational materials for public regarding potential problems an earthquake in Missouri could cause. | EQ | Н | Continue to provide updated materials through FEMA/SEMA. | EMC | Univ of MO Outreach and Extension | | Mod | I/C, PD,LF, EMCC | 2015 | local review |
| 4.0.4 | Encourage schools to include earthquake safety programs in with other emergency preparedness training. | EQ | Н | Ensure schools include emergency messages and drills. | EMC | Local school districts | local | Mod | I/C, PD,LF, EMCC | 2015 | Local Review |

| Figure 4 | 4.4.9i | | | Mitigation Ac | tions for War | dsville | | | | | |
|----------|---|----------------------|----------|--|---------------------------------|---|--|-------------------|---------------------------------|---------------------------------|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion |
| | Provide public education materials before storm events to inform people of the danger of icy roads. | | Н | Continue to provide emergency messages through media contacts. | | 911 communciatio ns, County/City public works/ JCPD, CCSO | local | Mod | I/C, PD,LF, EMCC | 2015 | Local review |
| 4.0.5 | Have emergency supplies available at homes. | WW | Н | Continue providing community emergency programs, CERT. | EMC | CERT Team (Community Emergency Response Team) Citizen Corps Coordinator | Local/Homela nd Security grant funding | Mod | I/C, PD,LF, EMCC | 2015 | Local review |
| 4.0.6 | Encourage safe driving through public education campaigns, websites, and community events. | ww | Н | Efforts already being made. Continue to work with/through the County Sheriff's Department | Board of Trustees | County Sheriff's Dept. | Internal Budget | Mod | I/C, PD,LF, EMCC | Yearly | Monthly reports from Cole County Sheriff's Department - Village Deputy |
| 4.0.7 | Provide education to homeowners living near large fuel areas (forest, grasslands, etc.) on what they can do to minimize risk. | WF | Н | Cotinue to provide wildfire messages, burn ban announcements and statewide Firewise program. | EMC | Fire districts and departments | local | Mod | I/C, PD,LF, EMCC | 2015 | Local review/ FD education programs |
| 5.0.1 | Acquire destroyed or substantially damaged properties and relocate people voluntarily. | FL | Н | Review options with Village Counsel | Board of Trustees | FEMA, SEMA, County | FEMA, SEMA Grants, Internal Budget | Sig | I/C, PD,LF, EMCC | 5+ years | To be determined on a case by case basis |

| Figure 4 | 1.4.9j | | | Mitigation Ac | tions for Ward | dsville | | | | | |
|----------|---|----------------------|----------|--|---|--|---------------------------------|-------------------|---------------------------------|---------------------------------|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion |
| | Adopt procedures for review of subdivision plans that minimize flood problems. | FL | Н | Review existing code; amend where needed | Board of Trustees | FEMA, SEMA, County | Internal Budget | Mod | I/C, PD,LF, EMCC | 1-3 years | Code revision and implementation |
| 5.0.3 | Encourage developer to include adequate storm water retention facilities on new builds. | FL | Н | Review existing code and Federal Storm Water regulation; amend where needed | Board of Trustees | FEMA, SEMA, DNR, County | Internal Budget | Sig | I/C, PD,LF, EMCC | 1-3 years | Code revision and implementation |
| | Establish lowest floor elevation for new construction at 1' above Base Flood Elevation (BFE). | FL | Н | Review existing code; amend where needed | Board of Trustees | County | Internal Budget | Min | I/C, PD,LF, EMCC | 1-3 years | Code revision and implementation |
| | Require developers to build in accordance with locally accepted codes. | EQ | Н | Staff currently requires all building development to be built to adopted building codes. | Cnty/JC Public Works and Planning | Local contractors, CntyCom, local gov councils | Internal | Mod | I/C, PD,LF, EMCC | Ongoing | Inspect development/buildi ngs for current code compliance |
| 5.0.5 | Encourage the retrofitting of structures to new earthquake safety standards when undergoing renovations/ improvements. | EQ | Н | Draft/prepare educational materials for public in regard to retrofitting | Cnty/JC Public Works and Planning | Local contractors, CntyCom, local gov councils | Internal/SEM A grants | Sig | I/C, PD,LF, EMCC | Ongoing | Distribute information to local centers of information/media outlets |
| | Maintain resources for public on retrofitting and protection techniques. | FL | Н | Supply needed international Code requirements. | EMC | Cnty/local gov public works | Local | Mod | I/C, PD,LF, EMCC | 2015 | Local adoptions of codes |

Changes:

1.1.3. The priority was changed from High to Medium because the actual process of applying to the CRS will involve staff time/funds which are not currently available.

4.4.10 Cole Co. R-V School District

| Figure | Mitigation Actions for Cole R-V School District | | | | | | | | | | | | | |
|----------|--|---|----------|--|-----------------------------------|---|------------------------------------|-------------------|---------------------------------|---------------------------------|--|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | | |
| 1.1.8 | Review and update school plans on an annual basis to ensure that they adequately address all potential threats from natural hazards. | EQ, HT, WW, FL, WST, T, HST | Н | Staff will review existing crisis manuals and update as needed. | Cole R-V School Administrators | | Local | Min | I/C, PD,LF, EMCC | Ongoing | Existing actions are reviewed and updated as needed. | | | |
| | Ensure the ability to respond to a severe winter weather event through advance preparation of maintenance areas and acquisition of stocks of chemicals and fuel appropriate for the length of a typical event. | WW | Н | Snow removal from traffic areas on campus. | Superintendent | Private contractors | Local | Mod | I/C, PD,LF, EMCC | Ongoing | Monitoring of winter weather and taking action when necessary. | | | |
| 3.2.2 | Ensure that school buses have two way radio communications that meet or exceed FCC requirements. | FL, WW, WST, T | Н | Upgrade existing radios to comply with FCC regulation on bandwith. | Cole R-V School Administrators | Durham School Services | Local | Mod | I/C, PD,LF, EMCC | 2011 | Maintenance of existing radios and replacement of non- working units. | | | |
| 3.2.6 | Establish and maintain a system of temporary alternative placement sites ("safe houses") for emergency evacuation and shelter of school populations. | EQ, HT, WF, WST, | Н | Evacuation of the building to a neighboring stucture in the event of an emergency. | School District Admin | Mark Kempker's Arena, Durham School Services, Missouri State Highway Patrol | N/A | Min | I/C, PD,LF, EMCC | Ongoing | Continued review and updating of the evacuation plan. | | | |
| 3.2.8 | Encourage the construction of tornado safe rooms. | WST, T | Н | District will watch for grant opportunities/study recommended structure types. | District Safety Coordinator | | FEMA or other federal grants | Sig | I/C, PD,LF, EMCC | 2016 | Review existing campus for potential site. | | | |

Changes

- 1.1.8 Projected cost changed from Moderate to Minimal because these plans are reviewed on an annual basis already.
- 3.2.2 Projected cost changed from Significant to Moderate because this cost will be covered by the operating budget.
- 3.2.6 Projected cost changed from Moderate to Minimal because these placement sites are already set up and there is no charge involved for having them in place.

4.4.11 Jefferson City Public Schools

| Figure | Mitigation Actions for Jefferson City Public Schools | | | | | | | | | | | | |
|----------|--|---|----------|---|---|--|---|-------------------|---------------------------------|---|--|--|--|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion | | |
| 1.1.8 | Review and update school plans on an annual basis to ensure that they adequately address all potential threats from natural hazards. | EQ, HT, WW, FL, WST, T, HST | Н | School District threat assessments will be reviewed and revised as necessary on an annual basis. | JCPS Director of Transportation & Safety | JCPS Safety & Security Committee, JCPS Buildings & Grounds Director | Internal funding, Outside grant sources | Mod | I/C, PD,LF, EMCC | on- going | Review committee will ensure that all current conditions have been addressed for the year | | |
| 1.1.14 | Ensure the ability to respond to a severe winter weather event through advance preparation of maintenance areas and acquisition of stocks of chemicals and fuel appropriate for the length of a typical event. | WW | Н | School District will work within its own departments and in conjunction with city and county public works agencies to identify and plan for school access in the event of severe winter driving conditions. | Transportation & Safety Director, Buildings & Grounds Director | Buildings & Grounds Dept., Cole Co. Public Works, Jeff City Streets Dept, Callaway Co Public Works Dept. | Internal funding, City/County road maintenance budgets | Mod | I/C, PD,LF, EMCC | Fall 2010 and on- going each year | Streets, driveways, and sidewalks are traversable by vehicles & pedestrians as needed | | |
| 3.2.2 | Ensure that school buses have two way radio communications that meet or exceed FCC requirements. | FL, WW, WST, T | Н | JCPS has already implemented a replacement plan for upgrading all 2-way radio communications equipment to meet/exceed new 2012 FCC requirements for narrow-band frequencies | Transportation & Safety Director | School bus contractor, District Safety & Security Comm, outside vendors | Internal funding, potential grant and/or other funding sources, bus contractor provided equipment | Sig | I/C, PD,LF, EMCC | Summer 2012 | All 2-way radios in buses and buildings meet 2012 FCC narrow-band standards | | |

| Figure | 4.4.11b | | | Mitigation Actions for | . lefferson Cit | v Public Schools | | | | | |
|----------|--|---------------------------|----------|--|--|---|---------------------------------|-------------------|---------------------------------|---------------------------------|---|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion |
| 3.2.6 | Establish and maintain a system of temporary alternative placement sites ("safe houses") for emergency evacuation and shelter of school populations. | EQ, HT, WF, WST, | Н | A system of "safe houses" has been established for each school for use during an emergency evacuation of a building. Written agreements are in place. Sites are reviewed/renewed each school year. | Transportation & Safety Director | Local gov, public/private orgs, JCPS building Principals | None | Min | I/C, PD,LF | Complet ed | Each school has at least one identified "safe house", and written agreements are on file. |
| 13.2.8 | Encourage the construction of tornado safe rooms. | WST, T | Н | Review the feasibility of construction of "tornado safe" rooms at individual buildings | Transportation & Safety Director | JCPS Safety & Security Committee | outside grants | Sig | I/C, PD,LF, EMCC | | Item has been presented for feasibility review to Safety and Security Committee. |

3.2.6 Projected cost changed from Moderate to Minimal because safe houses have been established as a no-cost cooperative and reciprocal community effort.

4.4.12 Lincoln University

| Fig. 4.4.12 Mitigation Actions for Lincoln University | | | | | | | | | | | |
|---|--|---|----------|--|---|--|---------------------------------|-------------------|---------------------------------|---------------------------------|---|
| Action # | Mitigation Action | Hazards Addressed | Priority | Plan for Implementation and Administration | Lead Department or Agency | Partners, if any | Potential Funding Sources | Projected Cost | Benefits (Losses Avoided) | Projected Completion Date | Criterion for Completion |
| 1.1.8 | Review and update school plans on an annual basis to ensure that they adequately address all potential threats from natural hazards. | EQ, HT, WW, FL, WST, T, HST | Н | Emergency Committee meets as needed and updates emergency plans at least annually. | School districts/Lincoln U. emergency mgmt teams | | Internal Funds | Mod | I/C, PD,LF, EMCC | Ongoing | Emergency plans are updated at least annually. |
| 1.1.14 | Ensure the ability to respond to a severe winter weather event through advance preparation of maintenance areas and acquisition of stocks of chemicals and fuel appropriate for the length of a typical event. | WW | Н | Lincoln University has its own snow plows and salt to maintain roads during winter weather. | Building and Grounds Dept. | | Internal Funds | Mod | I/C, PD,LF, EMCC | Ongoing | Severe winter weather events are responded to in a timely fashion. |
| 3.2.1 | Continue to alert the public of hazardous weather via early warning sirens/electronic notification system or establish a mass notification system where needed. | WST, T | Н | City sirens are audible throughout campus for weather related issues; all other issues will be addressed by committee action. | JC Police Chief, Lincoln U Police Dept. Emergency Committee | EMD, Cnty Sheriff, Fire Chiefs, Cnty PW Dir, Capitol Region EMS | Grants: FEMA, HSA | Sig | I/C, PD,LF, EMCC | 2012 | Active committee to evaluate needs and action phased project |
| | Establish and maintain a system of temporary alternative placement sites ("safe houses") for emergency evacuation and shelter of school populations. | EQ, HT, WF, WST, | Н | The University has 36 buildings - several of these could be converted quickly. Jason Hall is designated as 1st option. | School district admin, Red Cross | SEMA, Red Cross | Internal Funds | Mod | I/C, PD,LF, EMCC | Ongoing | Students and staff are safely sheltered when necessary. |

4.5 Funding Sources

There are numerous ways which local mitigation projects can be funded.

Local Funds

These funds come predominantly from property and sales tax revenues; they are generally allocated directly to school, public works, and other essential government functions. While there may be little room for mitigation funding within this revenue stream, mitigation activities frequently will be a part of essential government functions. For example, money that is allocated for a new school can fund stronger than normal roofs to help the school in the event of a tornado.

Non-Governmental Funds

Another potential source of revenue for local mitigation efforts are contributions of non-governmental organizations such as churches, charities, community relief funds, the Red Cross, hospitals, businesses, and nonprofit organizations. A variety of these local organizations can be tapped to help carry out local hazard mitigation initiatives.

Federal Funds

The bulk of federal funding for mitigation is available through the FEMA Mitigation Grants Programs; another possible funding source is Community Development Block Grants (CDBG) after a Presidential Disaster Declaration.

FEMA Mitigation Grant Funding - Jurisdictions which have adopted a FEMA approved Hazard Mitigation Plan are eligible for hazard mitigation funding through FEMA grant programs. The following five FEMA grant programs currently provide hazard mitigation funding:

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

Mitigation activities which are eligible for funding vary between the programs (see Figure 4.5.1). All potential projects must match the stated goals and objectives of the Cole County/Jefferson City Natural Hazard Mitigation Plan and the State of Missouri Hazard Mitigation Plan.

| Figure 4.5.1 | | | | | | | |
|--|------|-----|-----|-----|-----|--|--|
| Eligible Activities for FEMA Mitigation Grant Programs | | | | | | | |
| Activity | HMGP | PDM | FMA | RFC | SRL | | |
| 1. Mitigation Projects | X | X | X | X | X | | |
| Property Acquisition and Structure Demolition or Relocation | X | X | X | X | X | | |
| Structure Elevation | X | X | X | X | X | | |
| Mitigation Reconstruction | | | | | X | | |
| Dry Floodproofing of Historic Residential Structures | X | X | X | X | X | | |
| Dry Floodproofing of Non-residential Structures | X | X | X | X | | | |
| Minor Localized Flood Reduction Projects | X | X | X | X | X | | |
| Structural Retrofitting of Existing Buildings | X | X | | | | | |
| Non-structural Retrofitting of Existing Buildings and Facilities | X | X | | | | | |
| Safe Room Construction | X | X | | | | | |
| Infrastructure Retrofit | X | X | | | | | |
| Soil Stabilization | X | X | | | | | |
| Wildfire Mitigation | X | X | | | | | |
| Post-disaster Code Enforcement | X | | | | | | |
| 5% Initiative Projects | X | | | | | | |
| 2. Hazard Mitigation Planning | X | X | X | | | | |
| 3. Management Costs | X | X | X | X | X | | |
| Source: www.fema.gov/library/viewRecord.do?id=3648 | | | | | | | |

Application and Cost Share Requirements:

The application process for the FEMA Mitigation Grant Programs includes a Benefit Cost Analysis (BCA). A potential project must have a Benefit Cost Ratio of at least 1.0 to be considered for funding; a ratio of 1.0 indicates at least \$1 benefit for each \$1 spent on the project.

A BCA is the first step in assessing if a project has the potential to be funded. The BCA for a potential project is run on FEMA's BCA Software; planners at the Mid-MO RPC are trained on this software.

Application for most of the mitigation grant programs must be made through eGrants, FEMA's web-based, electronic grants management system. HMGP has a paper application.

Cost share requirements and the application format for these five programs are shown in Figure 4.5.2. Contributions of cash, in-kind services or materials, or any combination thereof, may be accepted as part of the non-Federal cost share. For FMA, not more than one half of the non-Federal contribution may be provided from in-kind contributions.

| Figure 4.5.2 | | | | | | | | |
|--|---------------------|--|----------|--|--|--|--|--|
| FEMA Mitigation Grant Programs – Local Match and Application Information | | | | | | | | |
| | | | | | | | | |
| Grant Program | Federal/Local Notes | | | | | | | |
| HMGP | 75/25 | | Paper | | | | | |
| PDM | 75/25 | | e-grants | | | | | |
| PDM (Small Impoverished Community) | 90/10 | Qualification Requirements for "small impoverished": • A community of 3,000 or fewer individuals identified by the State as a rural community that is not a remote area within the corporate boundaries of a larger city • An average per capita annual income not exceeding 80 percent of the national per capita income, based on best available data. (For current information: http://www.bea.gov) • A local unemployment rate exceeding by 1 percentage point or more the most recently reported, average yearly national unemployment rate. (For current information: http://www.bls.gov/eag/eag.us.htm) • Meet other criteria required by the State/Tribe/Territory in which the community is located | e-grants | | | | | |
| FMA | 75/25 | | e-grants | | | | | |
| FMA (Severe Repetitive Loss Property) | 90/10 | In Missouri, this cost share is less than the usual 75/25 because the State has an approved "Enhanced" State Mitigation Plan. | e-grants | | | | | |
| RFC | 100/0 | RFC is only available to applicants who cannot meet the cost share requirement of FMA. | e-grants | | | | | |
| SRL | 90/10 | In Missouri, this cost share is less than the usual 75/25 because the State has an approved "Enhanced" State Mitigation Plan. | e-grants | | | | | |

Details of each program are discussed below.

<u>Hazard Mitigation Grant Program (HMGP)</u>

The Hazard Mitigation Grant Program (HMGP) was created in November 1988 through Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. The HMGP assists states and local communities in implementing long-term mitigation measures following a Presidential disaster declaration. After a major disaster, communities may be able to identify additional areas where mitigation can help prevent losses in the future.

HMGP funding is allocated using a "sliding scale" formula based on the percentage of the funds spent on Public and Individual Assistance programs for each Presidential Disaster Declaration.

The HMGP can be used to fund projects to protect either public or private property; the proposed projects must fit within the state and local government's overall mitigation strategy for the disaster area, and comply with program guidelines.

Eligibility for funding under the HMGP is limited to state and local governments, certain private nonprofit organizations or institutions that serve a public function, Indian tribes and authorized tribal organizations. Applicants work through their state which is responsible for setting priorities for funding and administering the program.

More information on this program is available at: www.fema.gov/government/grant/hmgp/

Pre-Disaster Mitigation Program (PDM)

With the Disaster Mitigation Act of 2000, Congress approved the creation of a national program to provide a funding mechanism that is not dependent on a Presidential Disaster Declaration.

The Pre-Disaster Mitigation (PDM) Program provides funding for cost-effective hazard mitigation activities that complement a comprehensive mitigation program, and reduce injuries, loss of life, and damage and destruction of property. The PDM grant funds are provided to the state which then provides sub-grants to local governments for eligible mitigation activities.

More information on this program is available at: www.fema.gov/government/grant/pdm/

Flood Mitigation Assistance Program (FMA)

FMA was created as part of the National Flood Insurance Reform Act of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the NFIP. Applicants must be participants in good standing in NFIP and properties to be mitigated must have flood insurance.

States administer the FMA program and are responsible for selecting projects for funding from the applicants submitted by all communities within the state. The state forwards selected applications to FEMA for an eligibility determination. Although individuals cannot apply directly for FMA funds, their local government may submit an application on their behalf.

FMA funding for the state depends on the number of repetitive losses in the state. The frequency of flooding in Missouri in recent years, coupled with the losses incurred, has caused Missouri's funding to rise. This is a good program for smaller projects like low water crossings, according to Sheila Huddleston, Missouri State Hazard Mitigation Officer.

For FMA, not more than one half of the non-Federal may be provided from in-kind contributions.

More information on this program is available at: www.fema.gov/government/grant/fma/

Repetitive Flood Claims Grant Program (RFC)

The Repetitive Flood Claims (RFC) grant program was authorized in 1968 to assist States and communities in reducing flood damages to insured properties that have had one or more claims to the NFIP.

In order to apply for funding through this 100% Federal share program, a community must show that it can't meet FMA requirements due to lack of cost share match or capacity to manage the activities. This doesn't necessarily mean it needs to be a low-income community. A St. Louis area community was awarded a RFC grant on the basis that it couldn't meet FMA requirements because it was in the middle of the budget cycle.

More information on this program is available at: www.fema.gov/government/grant/rfc/

Severe Repetitive Loss Grant Program (SRL)

The Severe Repetitive Loss (SRL) grant program was authorized in 2004 to provide funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss (SRL) properties insured under the NFIP.

A SRL property is defined as a **residential property** that is covered under an NFIP flood insurance policy and:

- (a) Has at least four NFIP claim payments (including building and contents) over \$5,000 each, and the cumulative amount of such claims payments exceeds \$20,000; or
- (b) For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any ten-year period, and must be greater than 10 days apart. There are very specific requirements for this grant program; requirements need to be studied carefully before making application.

For buyouts under SRL, a property must be on FEMA's validated SRL list to be eligible. Property owner consultations are required before submitting an application.

More information on this program is available at: www.fema.gov/government/grant/srl/

Community Development Block Grant (CDBG)

The objective of the CDBG program is to assist communities in rehabilitating substandard dwelling structures and to expand economic opportunities, primarily for low-to-moderate-income families. After a Presidential Disaster Declaration CDBG funds may be used for long-term needs such as acquisition, reconstruction, and redevelopment of disaster-affected areas. There is no low-to-moderate income requirement after a Presidential Disaster Declaration.

Section 5: Plan Maintenance Process

Requirement §201.6(c)(4)(i):

[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 Plan Monitoring and Evaluation

The Cole County/Jefferson City Natural Hazard Mitigation Plan will be monitored and evaluated on a yearly basis, beginning in the year following approval and adoption. This means there will be four monitoring/evaluation periods. The last monitoring and evaluation period will lead into the 5-year update process.

The monitoring and evaluation with be facilitated through the Mid-MO Regional Planning Commission. It will consist of the following:

1. A meeting of the Hazard Mitigation Technical Steering Committee will be convened by planners at the Mid-MO Regional Planning Commission.

The purpose of the meeting will be to discuss any general hazard mitigation issues from the preceding year and prepare a survey to be completed by the participating jurisdictions. The survey will cover topics such as mitigation actions which have been implemented in the jurisdiction, changes in priorities of mitigation actions within the jurisdiction, needs not addressed by the current plan, and any other issues of concern to the committee. A general framework for the type of survey is shown in Figure 5.1.

- 2. The survey will be sent to all participating jurisdictions.
- 3. Survey information will be collated by planners at the Mid-MO RPC.
- 4. A second meeting of the Technical Steering Committee will be convened to discuss survey feedback and any other pertinent issues.
- 5. A yearly report will be written and included as an addendum to the current plan.

| Figure 5.1.1 Yearly Survey of Mitigation Actions for (Sample) | | | | | | | | | |
|--|-------------------|----------|---|------------------------------|---------------------------------|-----------------------------|--|----------|--|
| Action # | Mitigation Action | Priority | Plan for Implementation and Administration | Lead Department or Agency | Projected Completion Date | Criterion for Completion | Current Status of Mitigation Action | Comments | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Please indicate the current status of each mitigation action on the above chart. Please note any change to the priorities of actions. Are there any changes in your jurisdiction which may affect the content of the Cole County/Jefferson City Natural Hazard Mitigation Plan? | | | | | | | | | |
| | | | | | | | | | |

5.2 Plan Updating

FEMA requires that a local hazard mitigation plan, such as the Cole County/Jefferson City Natural Hazard Mitigation Plan, be updated and reapproved by FEMA every five years. This five year period, until the next expiration date, is measured from FEMA's acceptance of the first adoption resolutions submitted for an approved plan.

Assuming approval and adoption of the current plan sometime in 2011, the Cole County/Jefferson City Natural Hazard Mitigation Plan will need to be updated and reapproved by FEMA in 2016. A proposed timeline for the update is shown in Figure 5.2.1.

| Figure 5.2.1 Proposed Timeline for 5-year Update of Hazard Mitigation Plan | | | | | | | | |
|---|--|--|--|--|--|--|--|--|
| KEY: PED = Plan Expiration Date | | | | | | | | |
| Activity | Timeline to Begin | Responsible Party | | | | | | |
| Preliminary update of data | Yearly during maintenance/review of plan | Mid-MO RPC | | | | | | |
| Prepare cost estimates for update of plan and submit to SEMA | PED - 14 months | Mid-MO RPC | | | | | | |
| Receive Memorandum of Agreement from SEMA for update | PED - 12 months | SEMA | | | | | | |
| Review data for any additional updates | PED - 12 months | Mid-MO RPC | | | | | | |
| Contact participating jurisdictions re: representation on Technical Steering Committee for update of plan | PED - 12 months | Mid-MO RPC | | | | | | |
| Meetings to conduct preliminary review and update of plan | PED - 11 months | Technical Steering Committee | | | | | | |
| Survey to participating jurisdictions re: capabilities, vulnerable assets, future development | PED - 11 months | Mid-MO RPC | | | | | | |
| Public Meeting #1 for comment and input on draft update | PED - 9 months | Mid-MO RPC/Technical Steering Committee | | | | | | |
| Draft of update due at SEMA | PED - 8 months | Mid-MO RPC | | | | | | |
| Participating jurisdictions hold meetings to discuss plan and mitigation actions | PED - 8 months | Participating Jurisdictions | | | | | | |
| Public Meeting #2 for comment and input on final update | PED - 6 months | Mid-MO RPC/Technical Steering Committee | | | | | | |
| Final plan due at SEMA for review before submission to FEMA | PED - 5 months | Mid-MO RPC | | | | | | |
| Plan reviewed by SEMA | PED - 4 months | SEMA | | | | | | |
| Required changes/additions made to plan | PED - 4 months | Mid-MO RPC | | | | | | |
| Plan submitted to FEMA | PED - 3 months | SEMA | | | | | | |
| Participating jurisdictions adopt approved plan | PED - 2 months | Participating Jurisdictions | | | | | | |

The ongoing yearly maintenance and evaluation of the plan, as described previously, will be of great value when undertaking the five year update. Continuity of personnel on the Hazard Mitigation Technical Steering Committee throughout the five year process would be highly beneficial in taking mitigation planning to the next level.

The following data gaps in the current plan should be examined during the 2016 update process:

Dam Failure

Information from the mapping of the high hazards dams in the county should be completed before 2016. Emergency Action Plans (EAPs) may have been written for some, or all, of the regulated dams in the county by this time. The following sites may be helpful in obtaining current information on the progress of this work: DNR's Dam Safety Program (http://www.dnr.mo.gov/env/wrc/damsft/damsfthp.htm) and DamSafetyAction.org,

Levee Failure

There are some data gaps in assessing vulnerability to levee failure which, while not critical to gaining an overall perspective on vulnerability, would increase accuracy if available.

Inundation information is not readily available for areas protected by levee districts and areas protected by non-district or private levees are not known.

The US Army Corps of Engineers, working with FEMA and other federal, state, and local agencies, assembled a Regional Interagency Levee Task Force (ILTF) in 2008 to provide a uniform approach across the area impacted by flooding in the Midwest. Data is currently being updated and made more available through this task force. The following website may be helpful in providing the most current information on levee failure during the 2016 update: http://www.iwr.usace.army.mil/iltf/index.cfm

Taos Annexation

In the fall of 2010, late in the planning process for the current update, the City of Taos annexed several properties, almost tripling the geographic size of the jurisdiction. While the new city boundary has not been included in all maps, those maps pertaining to hazard impacts have been updated in this plan to reflect the change. The goal is to update all maps in the plan through the maintenance process in the coming five years.

5.3 Integration of Hazard Mitigation into Other Planning Mechanisms

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.

Successful mitigation depends on the actual implementation of the mitigation actions arrived at through the planning process. The composition of the Technical Steering Committee for the update of the Cole County/Jefferson City Missouri Natural Hazard Mitigation Plan bodes well for the successful incorporation of the hazard mitigation strategy into other planning processes throughout the Planning Area.

In addition to the core members of the Technical Steering Committee, the representatives from Cole County and Jefferson City were resourceful in bringing other knowledgeable staff to meetings on subjects in their particular areas of expertise. The entire process thus drew on experience and knowledge from: elected officials/staff from the incorporated communities; senior department members from Cole County and Jefferson City in key areas such as Emergency Management, Public Works, Planning, Fire, and Police; and representatives from the educational institutions, water districts, and a private water utility.

This diverse group worked to produce a thoughtful and useful document. The sheer number of different people involved in the update process has raised the level of awareness of hazard mitigation planning within the Planning Area; this will also be helpful when integrating the *Hazard Mitigation Plan* into other planning processes.

Cole County

The primary planning document for the unincorporated area of Cole County is *The Cole County Master Plan*. An update of this plan was recently completed in 2010. During the next update process, the requirements of the *Hazard Mitigation Plan* will be integrated with this document. In the meantime, the Senior Planner for the County will request that the County Planning Commission adopt the Hazard Mitigation Plan as an additional planning document for the County.

Both the Director of Public Works and the Senior Planner for the County were key members of the Technical Steering Committee for the update of the *Hazard Mitigation Plan*; they were also involved in developing the plan for implementing and administering those County mitigation actions which fall under their scope of duties. They will ensure that the mitigation actions are included in the Public Works/Planning work program according to the prioritizations in the plan.

The Cole County/City of Jefferson Emergency Operations Plan (EOP) covers all jurisdictions within Cole County and was last updated in 2008. The Emergency Management Coordinator was a key member of the Technical Steering Committee for the update of the Hazard Mitigation Plan and also has the responsibility of updating the EOP annually before submission to the State for approval. This update is done with input from a wide range of representatives of the County

and incorporated communities. The Emergency Management Coordinator is the lead on many of the mitigation actions for Cole County and the entire Planning Area. At the next update of the *EOP*, these mitigation actions will be integrated into the *EOP*, if they are not already included.

There also may be background information, data, and maps in the updated *Hazard Mitigation Plan* which will prove useful during the next update of the *EOP*. *Appendix 5* of the *EOP Basic Plan* is a Hazard Analysis of both natural and technological hazards in Cole County. Attachments in this section deal specifically with Earthquake, Dam Failure, and the National Flood Insurance Program. These topics are all covered extensively in Section 3 of the *Hazard Mitigation Plan*, with some additional information on the NFIP in Section 4.

Jefferson City

The *Jefferson City Comprehensive Plan* is the main planning document for Jefferson City. The City already has a well-developed hazard mitigation strategy in place through the *Cole County/City of Jefferson Emergency Operations Plan* and development codes, including building construction, zoning, subdivision, stormwater, and floodplain regulations.

While many mitigation actions are in place in Jefferson City, the mitigation actions in the updated *Hazard Mitigation Plan* will be reviewed by the following groups to ensure integration into planning processes as needed: the Planning and Zoning Commission, and City Council Committees of Public Works and Planning, and Public Safety. The Deputy Director for Planning and Transportation Services (Community Development Department), in conjunction with City Administration, will ensure that the mitigation actions are brought before these groups for review.

Incorporated Communities of Lohman, Russellville, St. Martins, St. Thomas, Taos, Wardsville

The smaller incorporated communities in the Planning Area do not have Master or Comprehensive Plans. They are, however, part of the *Cole County/City of Jefferson EOP*; the integration of the *Hazard Mitigation Plan* with the *EOP* will serve to integrate the actions under the lead of the EMC for these jurisdictions also.

In all of these communities, the City Council or the Board of Aldermen/Trustees serves as the main planning body. These bodies were informed of the hazard mitigation update planning process as it was taking place. The councils/boards approved the specific mitigation actions for their jurisdictions, in addition to the plans for implementation and administration. In most of these communities, the Council/Mayor, Board/Chairman, or City Clerk is responsible for implementing most of the specific mitigation actions.

Cole County R-V School District

The *Cole County R-V Crisis Management Plan* is reviewed yearly to ensure that it is kept up to date. The mitigation actions in the *Hazard Mitigation Plan* will be integrated into the *Crisis Management Plan* at the next update.

<u>Jefferson City Public School District</u>

The mitigation actions in the *Hazard Mitigation Plan* have already been integrated into the *Jefferson City Public Schools Crisis Management Plan* which is updated on a regular basis.

Lincoln University

The *Lincoln University Emergency Operations Plan (EOP)* is a thorough document which guides the mitigation and preparedness for, response to, and recovery from all disasters, natural and human-made, on the campus. It is updated as needed, most recently in 2008.

The Chairman of the Emergency Committee responsible for the update of the *Lincoln University EOP* approved the mitigation actions included in the Hazard Mitigation Plan for Lincoln University; he was also involved in writing the plan for their implementation and administration. These mitigation actions will be brought to the Emergency Committee at the next update of the *Lincoln University EOP* to ensure that any actions not already included are integrated into the mitigation portion of the plan.

In addition, as mentioned for the *Cole County/City of Jefferson EOP*, there may be background information, data, and maps in the updated *Hazard Mitigation Plan* which will prove useful for Lincoln University during the next update of its *EOP*.

All Participating Jurisdictions

In addition to the specific incorporation/integration methods described for each participating jurisdiction, it should be emphasized that the yearly maintenance of the *Hazard Mitigation Plan*, as discussed in Section 5.1, will serve to help incorporate and integrate its requirements into the planning in the jurisdictions.

5.4 Public Participation in Plan Maintenance

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 Cole County/Jefferson City Natural Hazard Mitigation Plan will remain posted on the website of the Mid-Missouri Regional Planning Commission (http://mmrpc.org/reports-library/hazard-mitigation-reports/) for public review and comment. Either the plan itself or links to the plan will also be posted on as many websites of participating jurisdictions as possible.

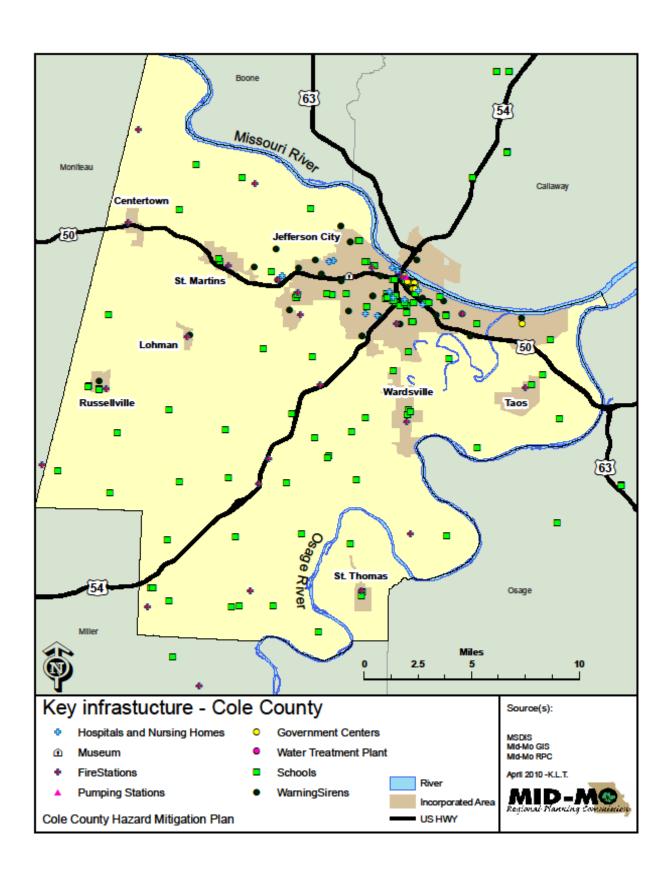
The Cole County Emergency Management Coordinator will facilitate presenting the plan at the annual Local Emergency Operation Plan (LEOP) Review. This review is attended by representative of the following groups:

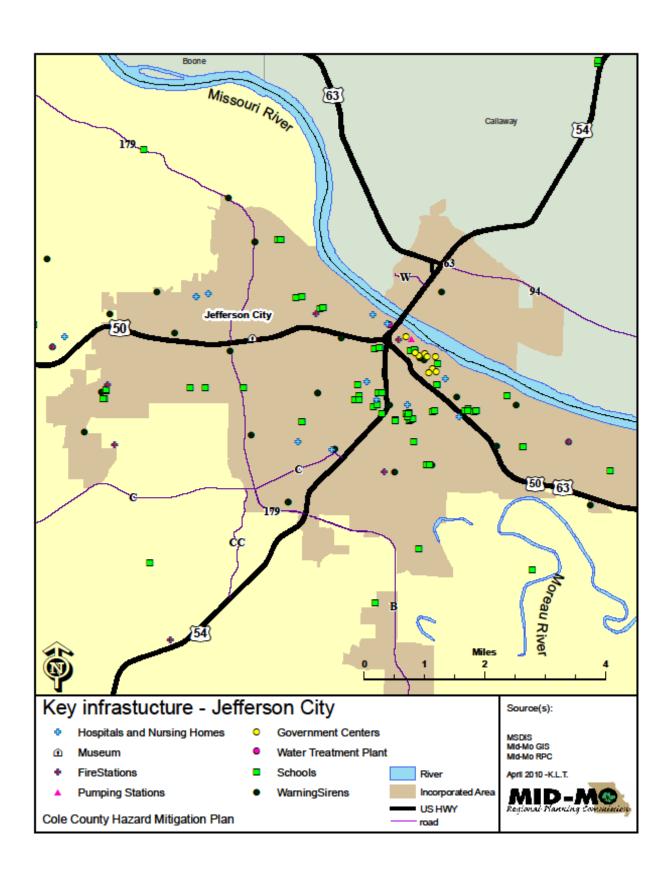
- Health Department Personnel
- City Fire and Rural Fire Protection Districts
- City Elected Officials/Administrators
- Educational Personnel
- Local Emergency Planning Committees
- Local Police/Sheriff Department Personnel
- Cole County Commissioners/Directors

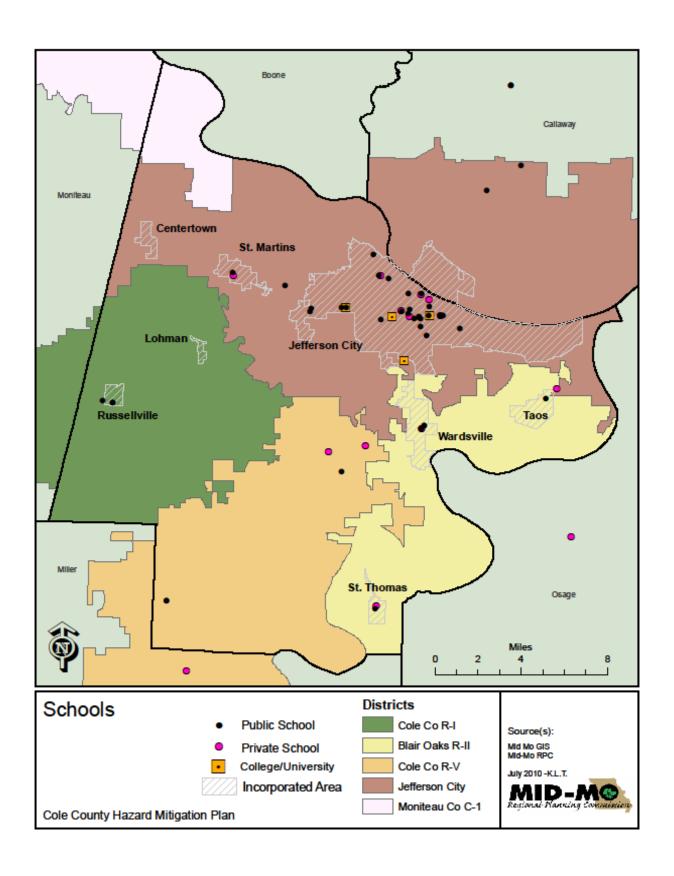
In addition, all meetings of the Technical Steering Committee for the review and maintenance of the plan will be publicly posted as required by Missouri's Sunshine Law and open to the public.

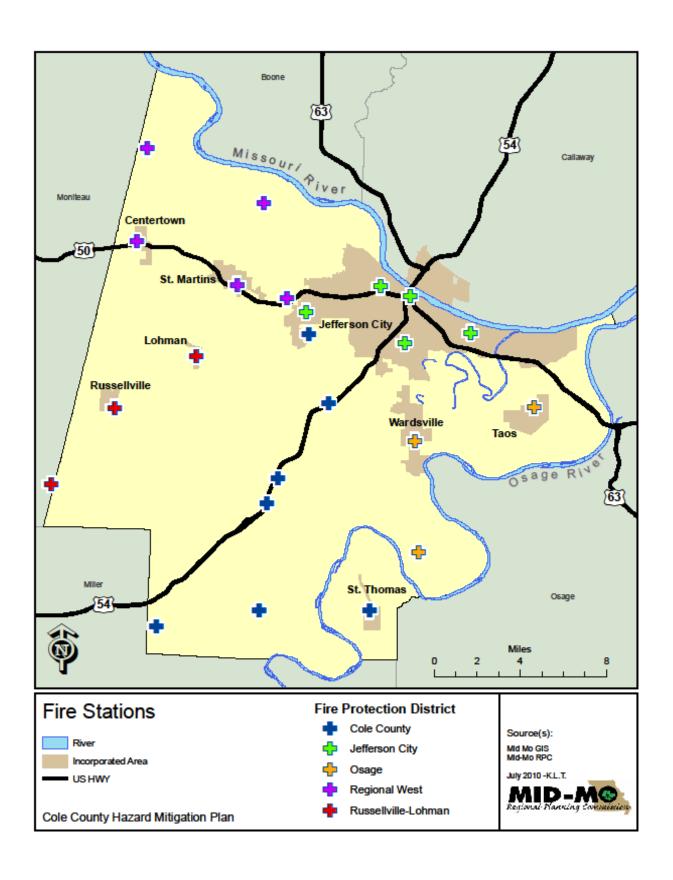
Section 6: Maps

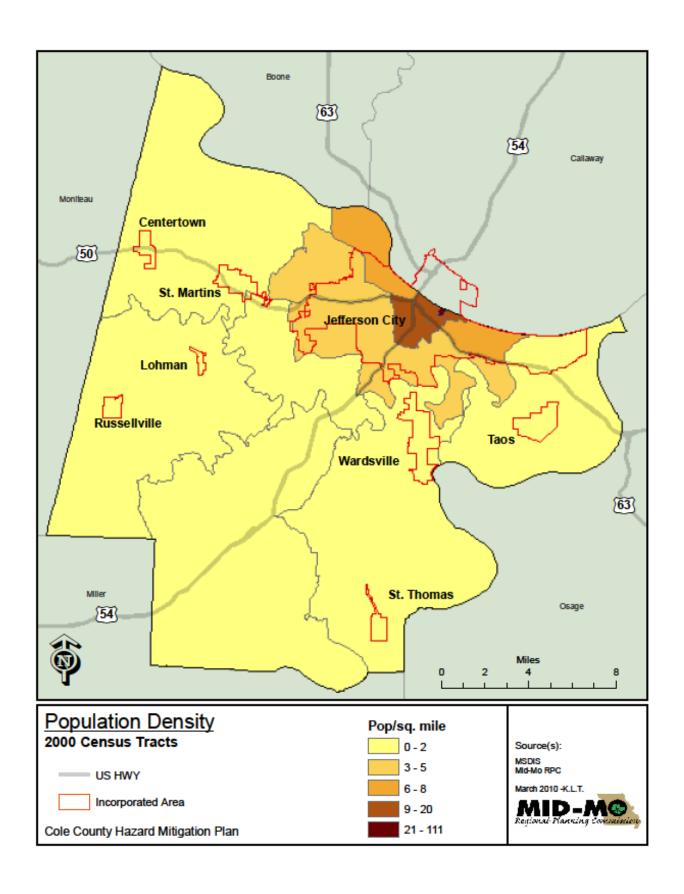
- Cole County Key Infrastructure
- Cole County Key Infrastructure Jefferson City
- Cole County Schools
- Cole County Fire Stations
- Cole County Population Density
- Cole County Land Use
- Cole County Hospitals and Nursing Homes
- Cole County Transportation
- Cole County Warning Sirens

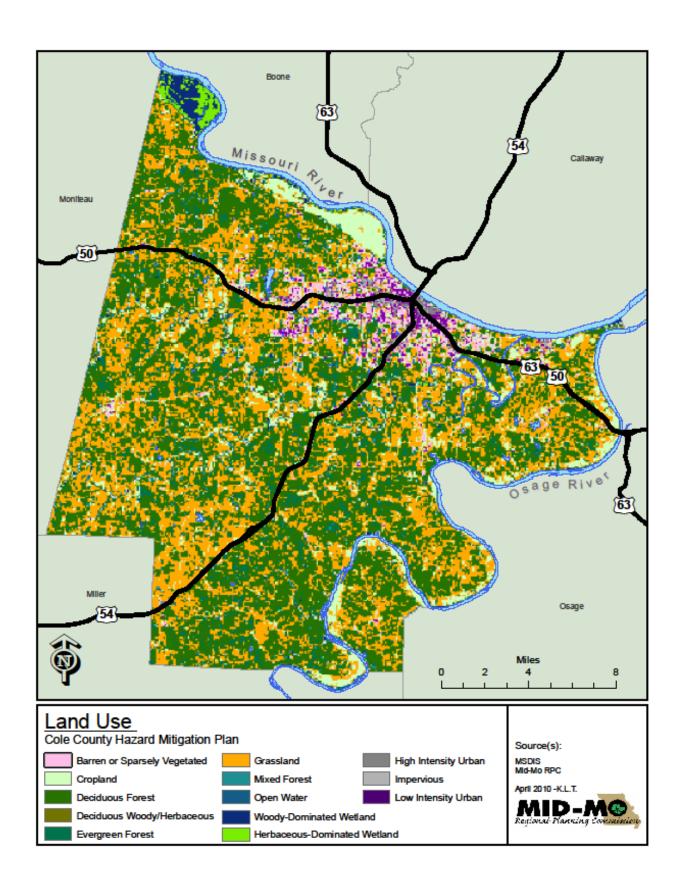


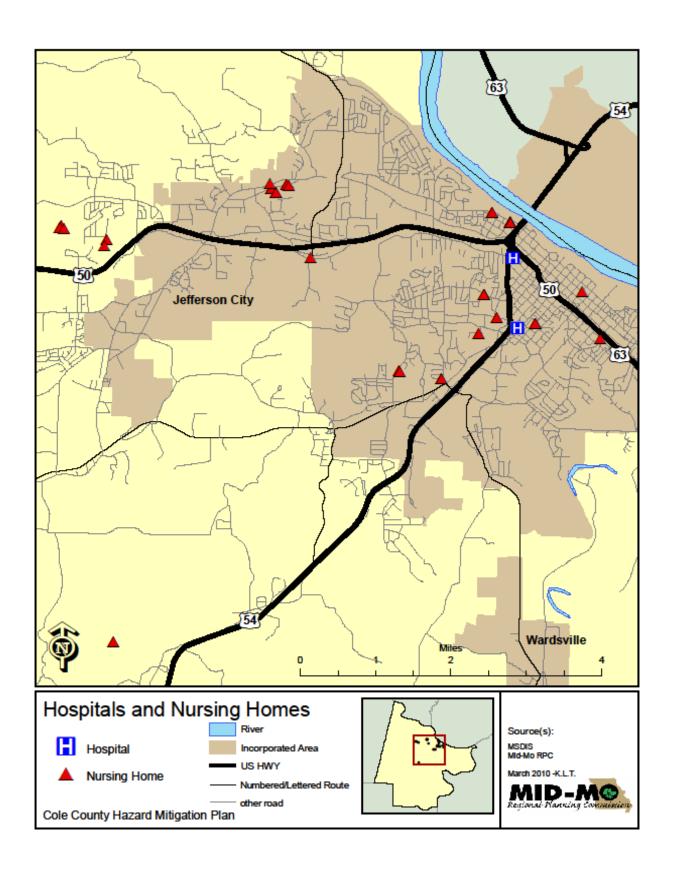


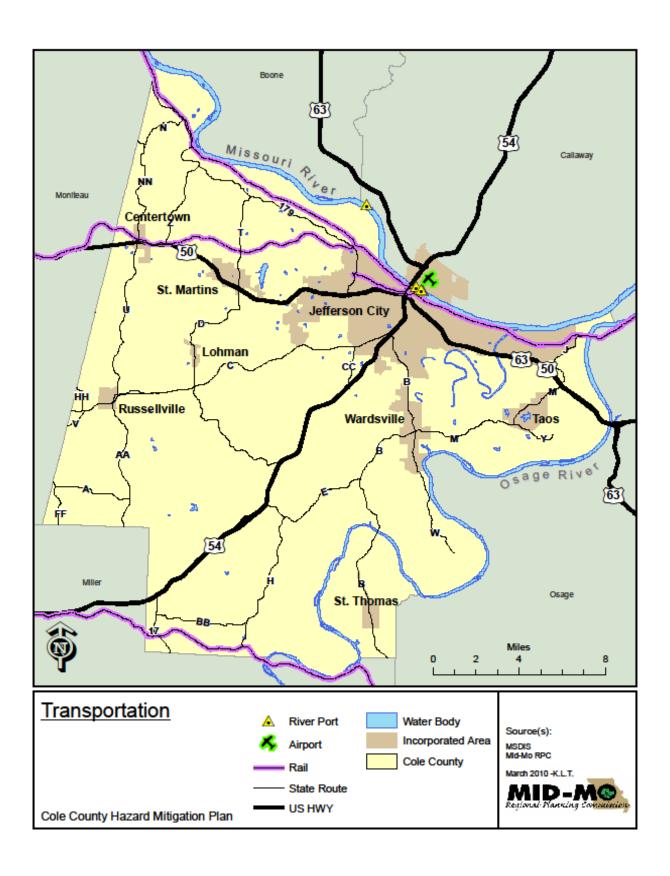


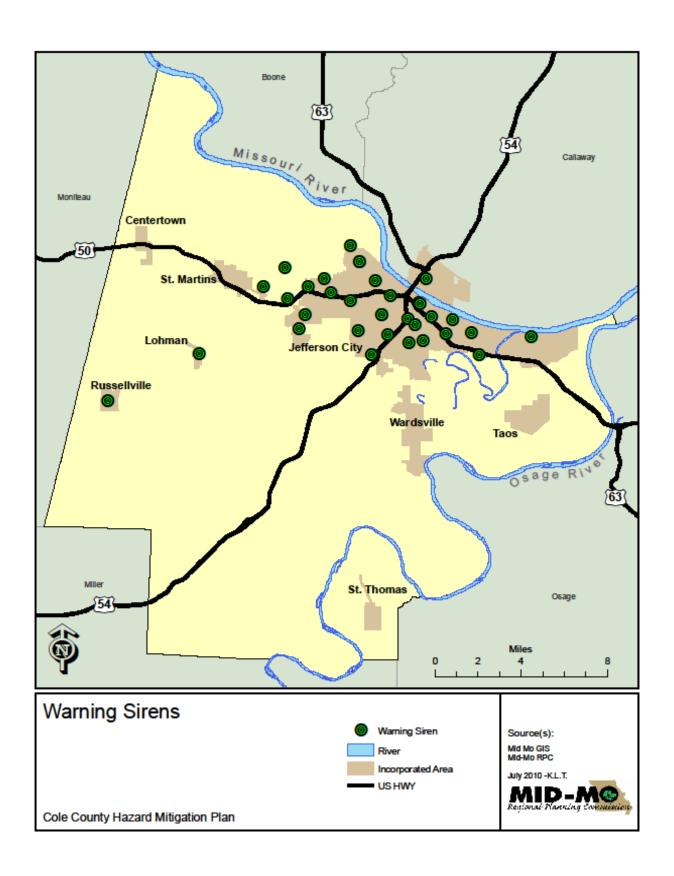












Appendix A

Adoption Resolutions

Appendix B

St. Thomas Letter of Representation



To MMRRPC:

The City of St. Thomas would like to appoint Mr. Larry Banz as our representative to the Hazard Mitigation Plan.

Tom Kliegel

Serving The Community For Over 100 Years With A Strong Committment For The Good Life

Appendix C

Meeting Agendas

Technical Steering Committee Meeting #1 June 1, 2010, 9-11 am Cole County Emergency Services Building, Jefferson City

- 1. Welcome and Introductions
- 2. Overview of Hazard Mitigation Plan
- 3. Initial Discussions
 - · Inkind hours and timesheets
 - · Jefferson City/Cole and Callaway Counties
 - School Districts and Special Districts
 - · Tentative timeline of update
 - · Current FEMA requirements
 - · Which sections need updating?
- 4. Overview of Goals, Objectives, and Actions
- 5. Hazard Risk Assessment
 - Hazards to Profile
 - Flooding Profile and Mitigation Actions
- 6. Next Meeting

Technical Steering Committee Meeting #2 June 15, 2010, 8-10 am Cole County Emergency Services Building, Jefferson City

Agenda

- 1. Welcome and Introductions
- 2. Hazard Risk Assessment Process
 - A. For each hazard:
 - · Review profile and actions from original plan (completed, deleted, deferred)
 - Add any new suggested actions
 - B. After all the hazards and actions have been reviewed and updated:
 - Prioritization (using STAPLEE and benefit/cost review)
- 3. Hazard Risk Assessment Flood And Levee Failure
- 4. Next Meeting agenda and time

Hazards for Risk Assessment:

Flood

Levee Failure Drought
Dam Failure Extreme Heat

Severe Winter Weather

Wildfire

Windstorm (High Wind)

Hailstorm (High Will

Earthquake

Tomado

Land Subsidence/Sinkhole

Introductory Meeting for Special Districts and School Districts
June 15, 2010, 10:30 am - Noon
Cole County Emergency Services Building, Jefferson City

Agenda

- 1. Welcome and Introductions
- 2. Overview of Hazard Mitigation Plan
- 3. Level of Participation
 - Participating Jurisdiction
 - · Participation in planning process
- 4. Nitty-Gritty Details

Tentative timeline of update Inkind hours and timesheets

5. Next Meeting -

Hazards for Risk Assessment:

Flood

Levee Failure

Dam Failure

Windstorm (High Wind) Hailstorm

Tornado

Extreme Heat

Drought

Earthquake

Land Subsidence/Sinkhole

Severe Winter Weather

Wildfire

Technical Steering Committee Meeting #3 June 29, 2010, 8-10 am Cole County Emergency Services Building, Jefferson City

Agenda

- 1. Welcome and Introductions
- 2. Follow up from Last Meeting Flood And Levee Failure
- 3. Measures of Probability and Severity
- 4. Mitigation Actions for Windstorm, Tornado, Hailstorm
 - · Review profile and actions from original plan (completed, deleted, deferred)
 - Add any new suggested actions
 - Probability and Severity
- 5. Next Meeting agenda and time

Hazards for Risk Assessment:

Flood

Levee Failure Drought
Dam Failure Extreme Heat

Severe Winter Weather

Wildfire

Windstorm (High Wind)

Earthquake

Hailstorm Tornado

Land Subsidence/Sinkhole

Technical Steering Committee Meeting #4 July 15, 2010, 9-11 am Cole County Emergency Services Building, Jefferson City

- 1. Welcome and Introductions
- 2. Follow up from Previous Meetings
 - Community Surveys
 - In-kind timesheets
 - · Mitigation Actions: Flood, Tornado, Severe Winter Weather
- 3. Mitigation Actions for Drought, Wildfire, Extreme Heat
 - · Review profile and actions from original plan (completed, deleted, deferred)
 - Add any new suggested actions
- 4. Overview of STAPLEE Review and Prioritization (if time allows)
- 5. Next Meeting agenda and time

Educators Meeting
Friday, July 16, 2010, 9-11 am
Cole County Emergency Services Building, Jefferson City

- 1. Welcome and Introductions
- 2. Overview of Hazard Mitigation Plan
 - · History and Purpose
 - Benefits
 - · Participating Jurisdiction Requirements
 - · Hazards Being Assessed in Cole County
- 3. Nitty-gritty Details
 - Timeline of update
 - Inkind timesheets
- 4. Mitigation Actions for the School Districts/Institutions
 - Actions
 - STAPLEE/Prioritization
- 5. Process going forward
 - Return survey
 - Review of draft
 - · Review and discussion of mitigation actions
 - · Formal adoption of plan

Technical Steering Committee Meeting #5 July 27, 2010, 8-10 am Cole County Emergency Services Building, Jefferson City

| 1. | Welcome – any introductions – timesheets |
|----|--|
| 2. | Plan for Public Review Meeting #1 |
| 3. | Review actions for all hazards by Goal and Objective |
| 4. | STAPLEE and Benefit/Cost Review |
| 5. | Prioritization |
| 6. | Process for Review in Jurisdictions |
| 7. | Next Meeting |

Technical Steering Committee Meeting #6
August 4, 2010, 8:30-10:30 am
Cole County Emergency Services Building, Jefferson City

- 1. Welcome and Updates
 - 1st meeting for Public Review and Comment
 - Title of Plan
- 2. STAPLEE and Benefit/Cost Review, Prioritization continue
- 3. Process for Review in Jurisdictions
- 4. Future Meetings

Public Meeting No. 1

August 24th, 2010, 5:00 pm - 7:00 pm Eagles Building 1411 Missouri Blvd Jefferson City, MO 65109

Presented by:



Agenda

- I. Welcome and Introductions
- II. Presentation of the Process to update the Cole County/Jefferson City Hazard Mitigation Plan
 - -What is a Hazard Mitigation Plan?

Hazards assessed in the plan:

Flood Extreme Heat Severe Winter Weather Levee Failure Earthquake Tornado

Levee Failure Earthquake Tornado Dam Failure Hailstorm Wildfire

Drought Land Subsidence/Sinkhole Windstorm (High Wind)

- -What is the process to update?
- -Why it is important that communities participate in this planning process
- III. Presentation of the current draft of the Cole County Hazard Mitigation Plan
- IV. Input and Discussion

Technical Steering Committee Meeting #7 Nov. 8, 2010, 8-10 am Cole County Emergency Services Building, Jefferson City

- 1. Welcome and Updates
 - · Where we're at mitigation actions, Centertown, update submission
 - . 2nd meeting for Public Review and Comment tonight, 6-7 pm
 - Inkind hours
- 2. Integration of the hazard mitigation plan with other planning processes
 - Section 5
- 3. Maintenance of the plan during the next 5 years
 - Section 5
- 4. Additional Review of the Plan
 - Section 2
 - · Other sections comments, edits

Appendix D

Sign-in Sheets from meetings

Total Inkind Hours 10

Cole County Hazard Mitigation Plan Update Technical Steering Committee Meeting No. 1

Cole County Emergency Services Building Jefferson City, MO

June 1, 2010 9:00-11:00 am

| lokind | | | | | 8 | Cl | R | | 9 | d | 5 | | | | | |
|---------------------|-------------------------|--|---|-----------------------------------|-----------------------------|----------------------------------|-----------------------|----------------------------------|---------------------------------|------------------------|--|------------------------|---|--|--|--|
| Signature Signature | Sand K. Khel | nella Stuburger | Charles KElle | Warn Thor | | grand . | n. Cardad | 15m Kinshine | X Section of | Cherry Sam | Ause Heleste | 1ch Th | 7 | | | |
| Phone | 543-356 | 584-9312 | 353-0240 | on 619-5121 | (36-3614) | 1000 6346401 | 4059-459 A | -600. Com | 634-6450 | 2616-489 | 621-9779 | 11 | | | | |
| Fmail | SHRILFPINI- 60 ACL. COL | Nhut with 3@ yaho. Com 584-9812 | woodchip 1230 Yours 353-0240 | WThochen@emburgme: 1 was 614-5121 | Bonz Ocoleccumpion 636-3614 | BRENNICKE TEACITYM. 02. 637 6401 | mfast @ ieffeity www. | tomkat @ TomkaTRacquet Gall. Com | Super Wass Domitt@ Jenery Woll, | Dfarr@cole county, org | Resignal Planner Sysangaleotice marrer on 657-9779 | Katrinathomasammogacom | | | | |
| Position | CH CH | Truster | Chairman | Alterman | Director | FIRECHER | Ast City Ab | Aldeamou | Super Wees | EMA | Regional Planner | 0 /10 | | | | |
| Representing | VILLAGE OF WARDSING | Ne Ha Hutinger Willage of Centertain Truster | Marles Fillis Village of Centerton Chairman | City of Taos | Cole Co. Public Makes | TESTERSON CITY | 15 | City of Lohman | | col/sc | Nid-MO RPC | 11 | | | | |
| Name | RAINDY LIBBIET | Ne Ha Hutinger | Charles Ellis | Wayne Thoczen | Lam Benz | Bab REMINICK | Melva Fast | Tom Kirchner | Ser Smith | Bill FACE | Susan Galcoba | Katrina Thomas | | | | |

Total Inkind Hours 18

Cole County Hazard Mitigation Plan Update Technical Steering Committee Meeting No. 2

Cole County Emergency Services Building

Cl 6

3

30

June 15, 2010 8:00-10:00 am

Jefferson City, MO Harry Platter Signature Much 1215-619 7416-489 353-0240 843-6465 634-6305 690-2499 634-1452 782-3511 6346401 636-30A 636-3614 584.9312 634.6434 35-3567 Phone bf Arronch countries BRENNICK @ TORGITYMO.OR in fast (0); e Heity on WHICKENTH 3@ Jahoo. Con Nondchio 123/2 Yate offwirekide Autum Memillar P. effecture org benz Occiece unition Tomkar RACQUET GALCO Kliethernes Ocolecounty. USO DILLE ENMARCONA Hontons @ Jefferty man WINDERPORTATION. HRTLEPING BADL. COLL amuers & cole counts Email G15 Technician Coordinator 11470R Community Dev commenty Dev. Serior Planner OULCI MON Lerk ounci man FIRE CHES Position Director vustee Chair City OFST, MANTINS Cole Co. Riblic Works Villiago Center Pour Cole Ghy/JC EMA Cole Co. Public Works wase of Wassing City of Jefferson ty of Jeflorson of TERGESON Representing Villian Centeractor chman Mo D. t. CCPW C, +y Shannon Klichbernes MYERS Thorner GREN PHHER om Kinchnen Paville McChillan Benz Benz L. Assey FACT Phot My 55 harles EVIN VOVA 8

300

3 08

Ø

9119

3000

Lahi ratherus a rumra

Susanglete Quepe.

Res. Planner

MIG-MO RPC

Susan Contecto

Mis me RPC

Momes

Carrier

125V

-259

O

Cole County Hazard Mitigation Plan Update Special Districts Info Meeting

June 15, 2010 10:30 am-12:00 pm Cole County Emergency Services Building

| y, MO | Inkind | 1.5 | 1.5 | 1 | | 1.5 | | | | | | | | | | | | | |
|--------------------|--------------|---------------------------|----------------------|------------------------------------|----------------|-------------------|---------------------------|---|--|--|--|--|--|--|---|--|--|-----|--|
| Jefferson City, MO | Signature | 1 Well Conferment | 200 8/8-10 8/8-10 | Cor Lacen Fath | CAS. | | Juse stalent |) | | | | | | | 9 | | | | |
| | Phone | 50 634-90A | Y.009 63 | nbargnail. | 9 | 50 | | | | | | | | | | | | 7 | |
| | Email | irademann @ Cotod 634-901 | WShars Oroccoun | TUSSELLOILE (Demobalennes) 2001 XA | (| ban Ocolecounters | | | | | | | | | | | | | |
| | Position | Almin | | C.ty CLERK | | たいみ | Planner | | | | | | | | | | | 100 | |
| | Representing | ~ Col Gonty Fire | EME | 1 | Mid to RPC | Colectry | Lusan Galeota Mid- No RPC | | | | | | | | | | | | |
| | Name | July Nader Jana | MIKE Shirts | KAREN PIAHER | Katring Thomas | R. II FACT | Lower Caleuta | | | | | | | | | | | | |

Cole County Hazard Mitigation Plan Update Technical Steering Committee Meeting No. 3

June 29, 2010 8:00 - 10:00 am Cole County Emergency Services Building Jefferson City, MO

| Inkind | ١ | 6 | <i>∽</i> ⟨ | 1 | d | | | | | 6 | 6 | 6 | 6 | 4 | 6 | C 6 | | | |
|--------------|---------------|------------------------------|-------------------------|-------------------------------------|---|------------------------|--------------------------|-----------------------|--|----------------------------|--------------------|----------------------------|---------------------------|----------------------|--|---------------------|------------|---|--|
| Signature | KTY | Houn Hiter | Havid Hemsel | my fine ho | F. Grank | Welle Sutrain | Charle Left. | Sound of their | 1 Jango Flow | 2 th That | UP, KINUL | Pun Januar 1 | | Je. 03 | Human Hugh | Light for | Ans Aulant | | |
| Phone | | | 572892,2848 | 53-690-2499 | 573 654 6401 | m 5849312 | 584-9784 | 653541 C | 160, 619-5121 | 634-6456 | 034-14-80 | 0147-2410 | ong 634-6400 | 1036-36iA | 626-3614 | 24-114 | | | |
| Email | j | russe wille GEMBARAMAI). COM | Pulse 10 contra contain | Towk At 2 Quet to 20, 573-690-24 94 | 560000 ce (0 Jag(Cr., 140.00 573 654 640) | What with & Wahoo, Cam | Woodchip123 @ Yako | SHETLEPING CHAL. COLL | 4)+400 nan @ Enbury oru). 1 was 619-5121 | DSM. XIF @ JEFFCITHMS. OC. | amiller eighersma. | volucings of exelicity our | Reymode @ Jeffe Hums proc | Bonz Geopeannty.org | skietherner Orskrountwom | bface Ocole country | - Junior | | |
| Position | O4nner | eck | GER | 2, | | Trustee | Zee Zee | assum | Alder man | | ceta | | Police Almin | Director | 0. | Coord, watch | Phone | , | |
| Representing | Mid Mr. RPC | K156641114= | PWSD#/COLE (0 | Lob man Mo | TESTERN C.TY | Pontertour | Centertown | WROSNUE | 7605 | JESTASSON CUTY | There cake | Le forson Cuty | JETERSON CITY | Cop Co. Riblic Works | Shinns Klieberne Cole Co. Public Works | 6/6/5c FMA | Mid-MORPC | | |
| Name | Latina Thomas | | | | | B. 16 Hitings Pouter | Charles ELLIS Centertown | Ray Lazar | | BRIT SMILL | Gen mille | Party 1995 | | | Shinna Kligherna | Billface | 40 | | |

| | Inkind 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | 0 0 | 00 | 2 2 Total 20 |
|---|---|---|--|--|
| July 15, 2010 9:00-1 Cole Courty EMS Building | Signature From the Coleman | Super Delector Giffel Cole State Drumm Lan Warner This | There that | And State of the s |
| | Emril/Hore | Regional Moure Scale DMAN. COM Selected Scales Scales April 1866 Director, Goist Affeirs Stephen, Morning & Commister, com Staple, Doming Alter man with vencen & combergod! I com (Sugar | Francisco Sexen mo. org m fast @ Jeffertymo. org NHUT with 30 yahoo. Com tomkale tomkalate astulue. | 1 Denz @ Colecounty. org |
| rian update thing No. 4 | Position Commission Description | Seveliar Legl. Simoles, lais Attalis | File Chias Asst to JC. All. Trustee Aldonman | Drector Whosper City Class 675/Planu |
| Cole County Hazard Mitigation Flan Update Technolog Steering Committee Meeting No. 4 | Representing Coice Co. Partic Berky J.C. 40 Coc County Fire P | Mid-No RPC MKWC Missari American Waler Taos | JESTESSEN CITY JC CENTERTOWN LOMBON | Cole Co. Riblic Works Pluss of 2 Sole Boury City of Russecume |
| Cole County Technolical Stee | Name Shanner Bietherner Bob Cypter Jalie Rademann | Steve Morry | Dob Kennick Melva Faet Noell-Halinger Tom Kirchner | Larry Benz RANSEN PHHER KATHUR THOMMS |

Cole County Hazard Mitigation Plan Update Educators Meeting

| | | R | 4 | 7 | 3 | 7 | | Amilia | | | /o.v | | | | |
|--|--------------|-----------------------------------|-----------------------------------|-----------------------------------|-------------------------------|--------------------|----------------|--------------|---|--|------|--|-----|--|--|
| .00 am uilding ty, MO | Inkind | 401 | | 2 2 | | 1/2 | | | | | | | | | |
| July 16, 2010 9:00 - 11:00 am Cole County Emergency Services Building Jefferson City, MO | Signature | Dool of Lastin | (Je brung CANU) | 18 | | " Byther | 1 | An- 8.0.1 | | | | | | | |
| O | Phone | Y,000 6359127 | moh-864-865 | 2555.187(118) | 629-3008 | 634-9134 | 1 | | | | | | | | |
| ate | Email | SCHSUPER BODDERFUETY, Cyo 6359177 | 5mth@coler-vk12-mess 573-498-4000 | Pighed Kalincoln 1. ed. (57) (68) | John. Dyrne@ 1cps, k12. mg.us | bfarr Ocokeauntria | | | | | | | 190 | | |
| litigation Plan Upd Meeting | Position | Superintendent | | Corporal | DIR TRANSP. É | Coord, note | Plane | Phonoe | , | | | | | | |
| Cole County Hazard Mitigation Plan Update Educators Meeting | Representing | Diorese of JL | Cole County R-V | Lincoln University | JEff City Public School | Cole Seft EMA | Midho RPC | Hid. MO RPC | | | | | , | | |
| 0 | Name | Don Novotney | DAN SMITH | Keun Piotord | | Bill FAIR | Katrina Thomas | SusAN GAloba | | | | | | | |

Total Inkind Hours 10

Cole County hazard Mitigation Plan Update Technical Steering Committee Meeting #5

Jefferson, MO 8:00 - 10:00 am 7/27/2010

| Inkind | - 71 | - 16 | 3511 Z. | 305 D. | 21 | 4 2. | 2 | 1 | - 66 hi | 3 | ر ر | - | 146 2 | | | | | | |
|--------------|----------------------------------|--------------------------------------|--|---------------------------|-----------------------------------|-----------------------|------------------------------|----------------------|---|-------------------------------|---------------------------------|---------------|-----------------------------|--------------|--|--|--|--|--|
| Phone | y 584-93 | 584-979 | 1.00M 782- | 634-63 | 634-646 | 636-3614 | - | 435-3567 | ca. 690-2 | 681-5755 | 634-6400 | | 3 634.91 | (| | | | | |
| Email | NHutur 4130 49400 . Com 584-9312 | Woodchip 123 (2) yahoo, Com 584-9794 | Kussechville City CLERK russechville@embargmail.com 782-3511 | a mfast () effeity mo.o. | BZZWWCKE JASTENTONO, ORG 634-6401 | 1benz@cckcounty.org | SKliethermes Ocoleconaty ora | SHIETLEPING BOK. COM | Tomkat Ctom Kat RA Count Ball. co. 690-2499 | obeford Kig lincoln u. e. olo | RCYNOVER Ethityme. ORG 634-6400 | - | 1945 Colosan 2:019 624-9146 | | | | | | |
| Position | Trustee | Chairman | City Clerk | Asst Cty Ad | FIRE CHUSE) | Director | Senior Planner | CHAIR | Alderman | Corporal | Costain | Plum /615 | FWA | Plane | | | | | |
| Representing | | Centertown T | KMSSELLVILLE | C. +4 04 : 10++6150 | City of Tefferson | Cole Co. Public Works | Cole Co. Public Works | Vinage of WARDSVILLE | Lohman, Mo | Lincoln valversity | Ja60 | Mid me RPC | se ch | Mid-NO RPC | | | | | |
| Name | Me Ida Hutinger | Charles K. 1-LLis | KAREN PIGHER | . \ | KUBERT KENNICK | Lamy Sonz | Shaman Kliethernes | Tabasy Liaber | Homash. KiRchnen | Keyn Profess) | (Sob Cynora | Katine Thorns | g'y fam | Ansa Helesta | | | | | |

Cole County Hazard Mitigation Plan Update Technical Steering Committee Meeting #6

August 4, 2010 8:30 - 10:30 am Cole County Emergency Services Building Jefferson City, MO

| y, MO | 4 | d | 7 | | 7 | 4 | | 4 | 8 | | | | | | |
|------------------|----------------------|--------------------------------|---|---|-----------------------|-------------------------------|---|--------------------------------|-------------------------|--|---|--|--|--|--|
| Signature Inkind | - 01 | 6 | | 3and 14 Hed | CA | * Detes | Jon Fund | Balta | Frind | The state of the s | | | | | |
| Phone | 681.5555 | | 17/12-929 | 68-361 | onh7-459 3 | Mail 60M | 6542-069 X | 9416-689 6 | 10001000 | | | | | | |
| Email | UC 2/02/18 & Cropsia | (Bary Bester cumby on | Shicherand Colorand | SHETLEPINE & 40L. COU | RCYNOVO-QJEACITYMONOR | rysserrolle Femberg mail. Com | 1 690-249 TOWKUT @ TOWKAT RACGERT (200, CUM. | bface Ocokeounty. 07 634. 9146 | BREWA, CHO JRH COT MOCK | 1 | | | | | |
| Position | Corp | Director | Senior Planner | CHAIR | Captain | City Clerk | Alderman | EMA | CHIRS | Plumes/675 | , | | | | |
| Representing | Lincoln University | Cole Co. Rollic Works Director | Shannon Kliethermes Cole Co. Public Works | RANDY LIBBORY NUMBER OF WARRENING CHAIR | JC PD | RUSSELLVILLE | Lohman | Co/e/5C | JESPESENCITY | MID MO RPC | | | | | |
| Name | Keun Plaffors | | rmes | RandyLingary | Bob Cynour | KAREN PlAHER | Tom Kirchnen | B:11 FAC | SE RENNICK | Ketrina Thomas Mid no RPC | | | | | |

Cole County/Jefferson City Hazard Mitigation Plan Update Public Meeting #1

Eagles Lodge 1411 Mo Boulevard Court Jefferson City, MO August 24, 2010 5:00 - 7:00 pm

| | | enoly . | | | | | | | | | | | | |
|---------------------|--------------------------|---------------------|---------------------------|----------------|---------------------------|---------------------|------------|----|--|--|--|--|--|--|
| , i NIO | Inkind | 6 | 1 | 1 | 5 | _ | 1 | | | | | | | |
| Jellelson City, INC | | 1 | 1-60-1 | 4 | M Futh | No. | Lette | | | | | | | |
| | Signature | Call | Munit 7 | とした | com Lakery | Barne | X CEX | | | | | | | |
| | | 000 | por samos | 1 State | base mail. | 0 / SKG | P | \ | | | | | | |
| | Email | bfArre coleccustres | edwards expel & nappe any | , | russect once Octubar, Mai | BREWNICKE JESCHENSE | | | | | | | | |
| | Position | Emit | | l | O. Ly Clerk | INZ CHIEF | 204 | ٦, | | | | | | |
| | Community Represented | Ga/1.C. | Mist. no ape | Mid moffe | Russeyman | TEFFERM Ciry | Mid-40 RPC | , | | | | | | |
| | Name | Bet for | (54 Silan) | Katrina fromes | Kern Hotter | Terstermox | Ang Orlet | | | | | | | |

Total Inkind Hours 4

Cole County Hazard Mitigation Plan Update Technical Steering Committee Meeting #7

November 8, 2010 8:00-10:00am Cole County Emergency Services Building

| | |) | 0 | | lefferson City MO | 2 |
|----------------------|--------------|----------|--|-----------------|-------------------|--------|
| <u>Name</u> | Representing | Position | Email | Phone | Signature | Inkind |
| John Kirchnen | Loh man | Alderman | toun Kast @ to in Kast Raic in of ball. con 690-2498 1mm | 7. com 690-2498 | J. J. May | ١ |
| MICHA FAST | JeffersonCh | Sta +1 | m Fact 6 : P FE: house of 634 1540 | 10 634.64M | Madra Last | d |
| Bill fam | cola Chuy / | En'A | Starra conscount, on | 634-9146 | Both | 18 |
| Keyn Pickon | LUPO | Corporal | Olaford Ka Lycolago | | | 4 |
| Ketwing Thomis | Mid me APC | plane | | 657-9779 | | 1 |
| RANDY LIBBERT | 3 | CHARANN | SHOULFPINE (0.40). | 1035-3567 | 30 1.10 Mes | 1 |
| Susay GAlesta Mid-40 | Mid-MO RPC | Plynned | | | | |
| | | | | | | |
| | | | | | | T |
| | | | | | | I |
| | | | | | | I |
| | | | | | | I |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Cole County Emergency Services Building Monday, November 08, 2010 Jefferson City, MO Signature 573-657-9773 573-657-9779 573-634-8146 Phone bfarre coleccantyor Cole County/Jefferson City Natural Hazard Mitigation Plan Public Meeting #2 Email FMA Plante Position AN COKPC Cole Ctry FMB Mia- MO AR Representing S454W

Cole County/Jefferson City Hazard Mitigation Plan Update Public Meeting #1

August 24, 2010 5:90 - 7:00 pm Eagles Lodge 1411 Mo Boulevard Court Jefferson City, MO

| | | Gurty Church | | | | | | | | | | | | |
|--------------------|--------------------------|--------------------|-------------------------------|----------------|----------------------------|------------------|------------|---|--|--|--|--|--|--|
| WO. | Inkind | 6 | 1 | 1 | 2 | - | i | | | | | | | |
| Jefferson City, MO | Signature | S. Carley | wasen Ahmil Plan | ノカナーとん | Bacemail. com Kohra Plutte | Se Therese | Sur Dalut | | | | | | | |
| | Email | bface Cole Country | 82 Williaks Come & showing Co | - | Tussect oute Bondage Mail | GRANNER TERCINAL | ĺ | | | | | | | |
| | Position | Ems | | _ | 1. Cleek | 32, CHIEF | Rec. Plane | | | | | | | |
| | Community Represented | G&14.C. | Pard Jus 286 | | Russeyouch (| -726800 Car | N.2-40 | , | | | | | | |
| | Namo | Kill form | EN Sien | Katrinastrames | * Lew Flatte | TETTERMICK | Ans Ollet | | | | | | | |

| 2010 Services Building | Inkind | \ | - | / | | | | | | | | | | | 144 M |
|--|--------------|-----------------|----------------------------|---------------|--|--|--|--|--|---|--|--|--|--|-------|
| Monday, November 08, 2010 Cole County Fmergency Services Building Lefferson City, MO | Signature | LA LAND | 7-253 | Jan Sald | | | | | | | | | | | |
| | Phone | 5669-659-665 | | 273-457-872 | | | | | | 4 | | | | | |
| zard Mitigation Plan | Email | | b. F. Arr. Broke countryor | A | | | | | | | | | | | |
| Cole County/Jefferson City Natural Hazard Mitigation Plan Public Meeting #2 | Position | Prince | End | PHANNE | | | | | | | | | | | |
| Cole County/Jef | Representing | AN COKAC | COLE Chay END | N.W. 40 AR | | | | | | | | | | | |
| | au | Softwa- Theorem | Bill FACE | Susan Fralest | | | | | | | | | | | |

Appendix E

Press Releases/Meeting Announcements



Posted: May 26th, 2010

Cole County Hazard Mitigation Plan Update

Open to the Public

9:00 a.m. to 11:00 a.m. June 1st, 2010 Cole County Emergency Services Building 1736 Southridge Drive Jefferson City, MO 65109

This meeting is the first of a series to discuss, review, and update the Cole County Hazard Mitigation Plan per FEMA guidelines. This meeting is open to the public although discussion will center on participation by local community officials and their role in the planning process.

Agenda:

- · Welcome and Introductions
- Overview of Hazard Mitigation Plan and Process
- Overview of Goals, Objectives, and Actions
- Next Meeting

This announcement is in accordance with Section 610.011 of the Missouri Sunshine Law:



Posted: June 16th, 2010

Cole County Hazard Mitigation Plan Update

Open to the Public

8:00 a.m. to 10:00 a.m. June 29th, 2010 Cole County Emergency Services Building 1736 Southridge Drive Jefferson City, MO 65109

This meeting is the third of a series to discuss, review, and update the Cole County Hazard Mitigation Plan per FEMA guidelines. This meeting is open to the public although discussion will center on review of specific mitigation actions by local community leaders and staff.

Agenda:

- · Welcome and Introductions
- · Review of mitigation actions concerning Windstorm, Tornado, and Hail
- Next Meeting

This announcement is in accordance with Section 610.011 of the Missouri Sunshine Law:



Posted: July 9th, 2010

Cole County Hazard Mitigation Plan Update

Open to the Public

9:00 a.m. to 11:00 a.m. July 15th, 2010 Cole County Emergency Services Building 1736 Southridge Drive Jefferson City, MO 65109

This meeting is the fourth of a series to discuss, review, and update the Cole County Hazard Mitigation Plan per FEMA guidelines. This meeting is open to the public although discussion will center on review of specific mitigation actions by local community leaders and staff.

Agenda:

- Welcome and Introductions
- · Follow-up from previous meeting
- · Review of mitigation actions concerning Extreme Heat, Wildfire, and Drought
- Review prioritization process, STAPLEE
- Next Meeting

This announcement is in accordance with Section 610.011 of the Missouri Sunshine Law:



Posted: July 9th, 2010

Cole County Hazard Mitigation Plan Update

Open to the Public

9:00 a.m. to 11:00 a.m. July 16th, 2010 Cole County Emergency Services Building 1736 Southridge Drive Jefferson City, MO 65109

This meeting is the first meeting for educators to discuss, review, and update the Cole County Hazard Mitigation Plan per FEMA guidelines. This meeting is open to the public although discussion will center on participation by local community officials and their role in the planning process.

Agenda:

- · Welcome and Introductions
- Overview of Hazard Mitigation Plan and Process
- · Overview of Goals, Objectives, and Actions
- Prioritization
- · Participation in the future

This announcement is in accordance with Section 610.011 of the Missouri Sunshine Law:



Posted: July 16th, 2010

Cole County Hazard Mitigation Plan Update

Open to the Public

8:00 a.m. to 10:00 a.m. July 27th, 2010 Cole County Emergency Services Building 1736 Southridge Drive Jefferson City, MO 65109

This meeting is the fifth of a series to discuss, review, and update the Cole County Hazard Mitigation Plan per FEMA guidelines. This meeting is open to the public although discussion will center on review of specific mitigation actions by local community leaders and staff.

Agenda:

- Welcome and Introductions
- · Review of all Actions
- · Prioritization of Mitigation Actions for all Participating Jurisdictions
- Next Step for Participating Jurisdictions

This announcement is in accordance with Section 610.011 of the Missouri Sunshine Law:



Posted: August 2nd, 2010

Cole County Hazard Mitigation Plan Update

Open to the Public

8:30 a.m. to 10:30 a.m. August 4th, 2010 Cole County Emergency Services Building 1736 Southridge Drive Jefferson City, MO 65109

This meeting is the sixth in a series to discuss, review, and update the Cole County Hazard Mitigation Plan per FEMA guidelines. This meeting is open to the public although discussion will center on review of specific mitigation actions by local community leaders and staff.

Agenda:

- Welcome and Introductions
- · Continuation of prioritization of decided actions
- · Scheduling of future public meetings
- Next Meeting

For more information please contact: Katrina Thomas 573-657-9779 or katrinathomas@mmrpc.org

This announcement is in accordance with Section 610.011 of the Missouri Sunshine Law:



Posted: August 11th, 2010

Cole County/Jefferson City Hazard Mitigation Plan Update

Open to the Public

5:00 p.m. to 7:00 p.m. August 24th, 2010

Eagles Lodge 1411 Missouri Blvd Jefferson City, MO 65109

This meeting is the first public meeting to inform residents and interested parties on the progress of the review and update the Cole County/Jefferson City Hazard Mitigation Plan.

The Mid Missouri Regional Planning Commission would like to invite the public to attend and provide input and discussion.

Agenda:

- · Welcome and Introductions
- · Presentation on the planning process and FEMA guidelines
- · Presentation of the current draft of the plan
- Q/A session

This announcement is in accordance with Section 610.011 of the Missouri Sunshine Law:



Posted: November 4, 2010

Cole County Hazard Mitigation Plan Update

Open to the Public

8:00 a.m. to 10:00 a.m. November 8, 2010 Cole County Emergency Services Building 1736 Southridge Drive Jefferson City, MO 65109

This meeting is the seventh of a series to discuss, review, and update the Cole County Hazard Mitigation Plan per FEMA guidelines. This meeting is open to the public although discussion will center on participation by local community officials and their role in the planning process.

Agenda:

- Welcome and Introductions
- Integration of the Hazard Mitigation Plan
- · Maintenance of the plan
- Review draft of plan

This announcement is in accordance with Section 610.011 of the Missouri Sunshine Law:



Posted: October 6, 2010

Cole County/Jefferson City Natural Hazard Mitigation Plan Update

Open to the Public

6:00 p.m. to 7:00 p.m. November 8, 2010

Cole County Emergency Services Building 1736 Southridge Drive Jefferson City, MO 65109

This meeting is the second public meeting to inform residents and interested parties on the progress of the review and update the Cole County/Jefferson City Hazard Mitigation Plan.

The Mid Missouri Regional Planning Commission would like to invite the public to attend and provide input and discussion.

Agenda:

- · Welcome and Introductions
- Presentation on the planning process and FEMA guidelines
- · Presentation of the current draft of the plan
- Q/A session

This announcement is in accordance with Section 610.011 of the Missouri Sunshine Law:

Appendix F

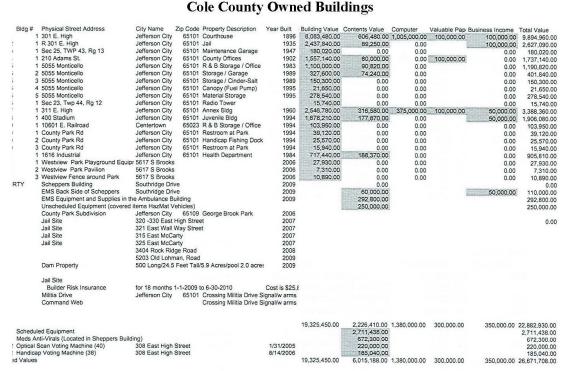
Value Statements:

- Cole County
- Jefferson City

Cole County Owned Equipment

| Year Description (Type, Manufacturer, Model, Capacity, etc. | c.) Amount of Insurance |
|---|-------------------------|
| 1966 Caterpillar Rubber Loader | 12,000.00 |
| 1980 Caterpillar Rubber Loader | 34,300.00 |
| 1990 Ingersoll Rand Roller | 20,710.00 |
| Hydraulic Control Sweeper TH84 Jenkins | 4,950.00 |
| Grace Pull Type Sweeper | 2,100.00 |
| Trailer 1000lb 2 wheel for Welder | 690.00 |
| 1992 926-E Wheel Loader Caterpillar | 70,167.00 |
| Sheepsfoot Roller Dual Wheel | 2,983.00 |
| 1972 Tilt-Top Trailer for Bobcat | 900.00 |
| 1993 Roller Cat CB534 Vibratory Compactor | 64,382.00 |
| 1993 Ford 6640 Tractor Boom Mower | 38,827.00 |
| 1994 John Deere 970 Tractor/ w/Finish Mower | 13,470.00 |
| 1996 Caterpillar 953B Track Loader | 135,000.00 |
| 1998 Gehl SXT Skid Steer Loader | 18,100.00 |
| 1998 John Deere Model 4100 | 12,489.00 |
| 1999 Gilcrest ZS 413 Pro Paver | 28,900.00 |
| 1999 New Holland Tractor w Boom | 59,621.00 |
| 2000 Caterpillar 426C Backhoe | 75,467.00 |
| 2000 Caterpillar 426C Backhoe | 75,467.00 |
| 2000 New Holland Tractor TM110 | 37,842.00 |
| 2001 773V Bobcat | 26,683.00 |
| 2002 Caterpillar 12H Motorgrader | 153,695.00 |
| 2001 Case 590 Super M Backhoe | 70,200.00 |
| 1995 Bandit 90 Brush Chipper | 14,615.00 |
| 2000 New Holland TM115 Tractor / Boom Mower | 71,636.00 |
| 2000 New Holland TM115 Tractor / Boom Mower | 71,636.00 |
| 2004 Caterpillar 12H Motorgrader | 157,253.00 |
| 1991 Hyster Rubber Tire Roller | 4,500.00 |
| 2005 New Holland Tractor w/Alamo Boom Mower | 83,910.00 |
| 2005 Caterpillar 12H Motorgrader | 163,900.00 |
| 2005 Caterpillar 12H Motorgrader | 163,900.00 |
| 2006 Caterpillar 12H Motorgrader | 172,582.00 |
| 2007 Ferris IS5100Z Mower for Park | 13,660.00 |
| 1990 Cedar Rapids Paver | 19,000.00 |
| 2008 Skid Steer Bobcat Loader & Attachements | 43,055.00 |
| 2008 Motorgrader 140 VHP | 191,424.00 |
| 2008 Motorgrader 140 VHP | 191,424.00 |
| Caterpillar Rubber Tire Loader | 140,000.00 |

Cole County Owned Buildings



Cole County Owned Vehicles

| | 10,900.00 | 20,764.00 | 13,000.00 | 12,950.00 | 12,500.00 | 12,500.00 | | 13,000.00 | 25,575.00 | 22,102.00 | 20,764.00 | | | 20,764.00 | 20,764.00 | 8,000.00 | 10,900.00 | | | | 200.00 | 200.00 | 1,100.00 | | | | Purch Price | 23,099.00 | | | | | Purch Price | 20,684.00 | 23,000.00 | 23,675.00 | | | | Purch Price | 17 822 00 | 17 822 00 | 54 520 00 | 34,328.00 | | | | | | | |
|-------------|---|---------------------------|--------------------------|------------------------|------------------------|------------------------|---|---|------------------------|------------------------|---------------------------|--------------------|-------------------------|---------------------------|---------------------------|--------------------------|---------------------------|-----------|-----------|-----------|--|---|-------------------------------------|--------------------------|------------------------|-----------|-------------|------------------------|------------------------|--------------------------|------------------------|---------------------------|-----------------------------|---------------------------|-------------------------------|-----------------------------------|------------------------------------|--|-----------------------------------|-----------------|------------------------------|----------------------------|--------------------------|----------------------------------|------------------------------------|---------------------------------|--------------------------------|----------------------|---------------------------------------|----------------------------|----------------------------|
| Support Div | 2005 Chevrolet Impala 2004 Chevrolet Impala | 2008 Trail Utility Blazer | 2006 Ford Crown Victoria | 2008 Chevrolet Impala | 2003 Ford Crown Victor | | Jail Div | 2006 Ford Crown Victoria | 2009 Chevy Express Van | 2009 Dodge Charger SXT | 2008 Trail Utility Blazer | | | 2008 Trail Utility Blazer | 2008 Trail Utility Blazer | 2001 Ford Ambulance Van | 2005 Chevrolet Impala | | | irailer | 1976 Quarter Ton Military Trailer (4 X 5) Target | 1976 Quarter Ton Military Trailer (4 X 5 Radio) | 2001 Bear Trailer Haul Rite Trailer | | MAINTENANCE | | | 2006 Ford F150 Truck | | | PROSECUTING ATT | | Make | 1999 Ford, Crown Victoria | 2003 Ford, Crown Victoria | 2003 rold, Cal | | SHOWSHIE | | Make | olet 1500 Truck | 2003 Chevrolet 1500 Truck | 1005 End I NT 9000 | | | | | | | | |
| | 18,385.00 | 20,894.00 | 17,005.00 | 21,483.00 | 21,873.00 | 16,832.00 | 29,898.00 | 20,529.00 | 54,714.00 | 47,733.00 | 41,959.00 | 5 TO 80 TO | 19,459.00 | 19,459.00 | 19,460.00 | 19,646.00 | 24,000.00 | | 30,608.00 | 88,175.00 | 88,175.00 | 63,275.00 | 48,000.00 | 48,000.00 | 46,469.00 | 42,500.00 | 73,782.00 | 71,995.00 | 26,600.00 | 56,600.00 | 55,487.00 | 43,908.00 | 78,078.00 | 43,908.00 | 58,405.00 | 82,950.00 | 107,000,00 | 98, 700,00 | 45 678 00 | 108 873 00 | 108,075.00 | 205,933.00 | 94,000,00 | 94,000,00 | | | | | | | |
| | 1997 Ford 150 Pickup 1999 Dodge Dakota 4 X 4 | | | | 2001 Dodge Kam 2500 4 | | | | 2006 Ford F550 | 2006 Ford F550 | 2006 Ford F550 | | | Ford | 2006 Ford F150 Truck | 2006 Ford Filso Iruck | 2010 Ford Exloper XLI 4X4 | | | | _ | 1997 International Tandem Truck | | | | | | | | | | | _ | 2001 Ford F-550 | 2002 Chevrolet S/A Dump Truck | | 2006 International Tractor Truck | | | | | | | | | | | | | | |
| Purch Price | 19,019.00 | 19,726.20 | 12 950 00 | 12,950.00 | 16,375.00 | 12,500.00 | 30 000 00 | 000000000000000000000000000000000000000 | 20,764.00 | 20,764.00 | 15,000.00 | 15,000.00 | 13,900.00 | 13,900.00 | 13,000.00 | 12,500.00 | 12,500.00 | 12,500.00 | 13,250.00 | 13,250.00 | 12,500.00 | 22,153.00 | 13,250.00 | 13,250.00 | 12,700.00 | 12,700.00 | 22,000.00 | 22,000.00 | 12,500.00 | 13,000.00 | 12,750.00 | 20,764.00 | 20,277.00 | 12,900.00 | -eased | 10,000,00 | 8 943 00 | 4.055.00 | 109 861 00 | 1 250 00 | 1 800 00 | 2 500 00 | 4,500.00 | 3 894 00 | 7,864,00 | 1,004.00 | 44,183.30 | 3,130.00 | 2,490.00 | 64 004 64 | 04,001.04 |
| Make | scape | 2010 Ford Escape | 2008 Chavrolat Implala | 2008 Chevrolet Implala | 2007 Chevrolet Tahoe | 2007 Ford Crown Victor | 2010 Dodge Charger 1982 Cadillac Gade Ranger APC | | 2004 Ford Explorer | | | 2004 Ford Explorer | 2006 FordCrown Victoria | | 2006 Ford Crown Victoria | 2006 Ford Crown Victoria | | | | | 2007 Chev Crown Impala | | | 2007 Ford Crown Victoria | 2003 Ford Crown Victor | | | 2006 Ford Crown Victor | 2004 Ford Crown Victor | 2006 Ford Crown Victoria | 2005 Ford Crown Victor | 2008 Trail Utility Blazer | 2008 CHEVY COLORADA PICK UP | 2005 Ford Crown Victor | 2010 Toyota Pickup | 1080 Holden Lewbox 25T/Connection | 1969 Holden Editionent Taglong 15T | 1980 6 Ton I Profile 14" Concrete Form | 1900 Street Sweeper Johnston MACH | 1978 Birmingham | 1978 Alıminim Tanker Trailer | 1978 Curb & Gutter Trailer | 1970 Call & Cause Hailer | 1979 16 Robest Equipment Trailer | 1907 Trailer Towmaster OC20-10 Top | 2004 Landoll (Tandom Slip Axla) | 2004 Landon (Tandern Sup Axie) | 1006 Honda / Whooler | 2007 Road Master 6 X 10 Cargo Trailer | 2000 FEED 40000 CMM Tarrel | ZOUS FOOD 19000 GVVV ITACK |

Jefferson City Owned Property Cole County / Jefferson City Natural Hazard Mitigation Plan Appendix F 3

Statement of Values

| Policy #: GP07 | 0301120 | Effective D | | T | | | | 10001 | | Oibar | Total |
|---|----------------------------------|-------------|--------------------------|----------------|---------------|---------------------------------|---------------------------|--------------------------|----------------------------|-------------------------|-------------------|
| Building Name | Address | County | Const. Type/ Desc. | Square Feet | Year Built | Year of upgrade- if <1970 | 100% Building Value | 100% Content Value | Other Prop. Description | Other Prop. Value | Location Value |
| olice Station | 401 Monroe | Cole | F/R | 17,964 | 1979 | | \$2,212,892 | \$1,248,480 | Tower | \$ 39,535 | \$3,500,907 |
| CPD Police | 401 Monioe | | | | | | | | | | **** |
| | 310 Handley Way | Cole | | 1,800 | 2005 | | | \$ 200,000 | | - | \$200,000 |
| | 911 East Miller | Cole | MNC | 6,160 | 1970 | | \$331,402 | \$ 5,202 | | - | \$330,004 |
| ewer Div. Treatment lant Main Building & | 401 Mokane Rd. | Callaway | F/R | | 1970 | , | \$0 | \$ 45,550 | | | \$45,550 |
| CI 1100 OU GUILLI | 401 Mokane Rd. | | Glass | 3,700 | 2003 | | \$1,560,600 | | | | \$1,560,600 |
| ionimion and in | 401 Mokane Rd. | Callaway | Frame | 1,000 | 1992 | | \$52,020 | | | | \$52,020 |
| Pole Barn #1 | | Callaway | Frame | | 1998 | | \$52,020 | | | | \$52,020 |
| ole Barn #2 | 401 Mokane Rd. 401 Mokane Rd. | Callaway | MNC | | 1970 | | \$156,060 | | | | \$156,060 |
| ime Silo | | Callaway | PVC | | 1970 | | \$52,020 | | | | \$52,020 |
| erric Chloride Tank | 401 Mokane Rd. 401 Mokane Rd. | Callaway | | | | | \$132,063 | | | | \$132,063 |
| Thickener | 401 Mokane Rd. | Callaway | - | 1 | | | \$2,601,000 | | | | \$2,601,000 |
| oumps/Motors | 401 Mokane Rd. | Callaway | MNC | | 1999 | | \$1,560,600 | | | | \$1,560,600 |
| Solids Naturing Bldg. | 401 Mokane Rd. | Callaway | MNC | | 1999 | | \$260,100 | | | | \$260,100 |
| Thickener #2 | 101 1112 | Callaway | MNC | | 1999 | | \$208,080 | | - | | \$208,080 |
| Sludge Storage Tanks | 401 Mokane Rd. | Callaway | MNC | 1 | 1999 | 1 | \$104,040 | | | | \$104,040 |
| Biofiller | 401 Mokane Rd. | Gallaway | IVII VO | + | 1 | | | | | 1 | |
| Pump Station - Scholastic | 3003 Robinson Rd. | Cole | | - | 1992 | - | \$60,000 | - | | - | \$60,000 |
| Pump Station - Randall Drive | 3718 Randali Dr. | Cole | · | | 1991 | | \$30,000 | | | | \$30,000 |
| Pump Station - Woodward Lake | 5221 Sharon Dr. | Cole | | | 1990 | | \$60,000 | | | - | \$60,000 |
| Pump Station - Bonita Paseo | 1336 Bonita Paseo | Cole | | | 1994 | | \$1,000 | | | | \$1,000 |
| Pump Station - Algoa A | 7310 One Color Way | Cole | | | 2002 | | \$172,000 | | | | \$172,000 |
| Pump Station - Algoa B | 8501 No Victims Way | Cole | | | 2002 | | \$220,000 | | | | \$220,000 |
| Blower Bldg.& Treatment Plant-Algor | 7907 Cortez Drive | Cole | | | 2003 | | \$1,500 | | | | \$1,500 |
| Pump Station - Parkview Meadows | 214 Pheasant Run Rd. | Cole | | | 2003 | | \$60,000 | | | | \$60,000 |
| Pump Station - Westport | 4801 Westport Dr. | Cole | | | 1995 | | \$60,000 | | | | \$60,000 |
| Indian Hills Pumping Station | 342 Tornahawk | Cole | MNC | 60 | 0 1970 | 1982 | \$208,080 | - | | | \$208,080 |
| Green Meadow Pumping Station | 2301 Green Meadow Dr. | Cole | MNC | 50 | 0 2000 | | \$431,000 | | | | \$431,000 |
| Haaf Pumping Station | 2314 Chase Woods Rd. | Cole | MNC | 50 | 0 1970 | 1984 | \$83,232 | | | | \$83,232 |
| Westinghouse Pumping Station | 600 Airport Rd. | Callawa | у | 50 | 0 197 | | \$208,080 | | | | \$208,08 |
| Walnut Pumping Station | 500 W. Main | Cole | MNC | 3,00 | 0 200 | 3 | \$5,500,200 |) | | | \$5,500,2 |

| Building Name | Address | County | Const. Type/ Desc. | Square Feet | Year Built | Year of upgrade- if <1970 | 100% Building Value | | 0% Itent lue | Other Prop. Description | Other Prop. Value | Total Location Value |
|--|--------------------------|---------------------|--------------------------|----------------|---------------|------------------------------|---------------------------|----|--------------------|----------------------------|-------------------------|----------------------------|
| lough Park - Park | | THE TOTAL PROPERTY. | | | | | | | | | | + |
| Maintenance Center - | | | | | | | | | 1 | 1 | 1 | *** 000 |
| Pole Barn | 932 Ellis Blvd. | Cole | NC | 5,760 | | | \$45,000 | | | | | \$45,000 |
| orestry Maintenance | | | | | | | | | | | 1 | ear 000 |
| Shed - old clubhouse | 932 Ellis Blvd. | Cole | Frame | | | | \$25,000 | | | | | \$25,000 |
| Memorial Park- | | | | | | | | | | 1 | | 607.010 |
| Custodian Res. | 105 Memorial Park Dr. | Cole | Frame | 608 | 1965 | | \$27,819 | | | | | \$27,819 |
| Open Pavillion & | | | | | | | | | | İ | | C101 11C |
| Storage | 115 Memorial Park Dr. | Cole | Frame | 7,888 | 1980 | | \$177,677 | \$ | 3,769 | | | \$181,446 |
| Memorial Park- | | | | | | | | | | | | 64 400 000 |
| Aquatics Center | 120 Binder Dr. | Cole | MNC | 3,405 | 1978 | 1994 | \$1,400,000 | - | | | | \$1,400,000 |
| Memorial Park- | | | | | | | | | | | | \$2,595 |
| Restroom | Memorial Park Dr. | Cole | Frame | 480 | 1980 | | \$2,595 | - | | | ised | \$2,090 |
| Garage Storage | 111 Memorial Park Dr. | Cole | MNC | 540 | 1980 | - | \$10,819 | | | | | \$10,819 |
| Large Metal | | | | | | | | | | | | |
| Building/Orange Shed | 810 Myrtle St. | Cole | Frame | 3,295 | 1975 | | \$76,669 | \$ | 9,949 | | | \$86,618 |
| Washington Park- | o ro mjruo ou | | | | | | | | | | | |
| Block Maint. Bldg. | 810 Myrtle St. | Cole | NC | 2,634 | 1980 | | \$63,847 | | | | | \$63,847 |
| Washing Park- Stone | | | | | | | | | | | | |
| Maint. Two Levels | 810 Myrtle St. | Cole | MNC | 1,008 | 1975 | | \$84,943 | | | | | \$84,943 |
| Small Stone Maint. | | | | | | | | | | | | |
| w/fireplace | 810 Myrtle St. | Cole | MNC | 811 | 1955 | | \$27,197 | - | | | | \$27,197 |
| Carago | | Cole | MNC | 758 | 1960 | | \$22,276 | | | | | \$22,276 |
| Garage Washington Park | | 100.0 | | | | | | | | | | |
| Center | 1203 Missouri Blvd. | Cole | MNC | 2,394 | 1960 | 2008 | \$300,000 | \$ | 3,000 | | | \$303,000 |
| Geinei | 1203 MISSOUT BITG. | | | | | | | | | | | |
| Ice Arena | 700 Kansas St. | Cole | MNC | 8,320 | 1990 | 1999 | \$3,000,000 | \$ | 75,000 | Refridgeration | \$624,240 | \$3,075,000 |
| Parks & Recreation- | | | | | | | | | | | 0.045 | 647.000 |
| Custodian Res. | 709 Virginia | Cole | Frame | 800 | 1969 | | \$38,213 | +- | | Garage | \$ 9,615 | \$47,020 |
| Vivion Field- | | | | | | | | | | | | W. W. Saran - 1975 |
| | 1201 Washington Park Dr. | Cole | Frame | 713 | 1987 | | \$33,659 | | | | | \$33,659 |
| Skateboard | 700 Kansas St. | Cole | MNC | 13,110 | | | \$80,000 | | | | | \$80,000 |
| Tennis Court- | | | | | | | | | | | | |
| Restrooms | 1015 Louisiana Ave. | Cole | Frame | 216 | 1975 | - | \$15,543 | + | | | | \$15,543 |
| Duensing Field- Restroom/Concession | 805 Ohio St. | Cole | MNC | 1,074 | 1985 | | \$14,359 | | | | | \$14,359 |
| Residence | 900 Indiana St. | Cole | Frame | 1,170 | 1965 | | \$42,656 | | | | | \$42,656 |
| House | 801 St. Mary's Blvd. | Cole | Frame | | 1980 | | \$49,511 | | | | | \$49,511 |

| Building Name | Address | County | Const. Typel Desc. | Square Feet | Year Built | Year of upgrade- if <1970 | 100% Building Value | 100% Content Value | Other Prop. Description | Other Prop. Value | Total Location Value |
|---|-----------------------|--------|--------------------------|----------------|---------------|---------------------------------|---------------------------|--------------------------|----------------------------|-------------------------|----------------------------|
| Outdoor Pavillion | 920 McClung Park Dr. | Cole | Frame | 1,976 | 1978 | | \$39,719 | | | | \$39,719 |
| Cooking Pavillion | 930 McClung Park Dr. | Cole | Frame | 1,194 | 1978 | | \$16,845 | | | | \$16,845 |
| Little Theatre/ Old Bath House | 1005 Chestnut St. | Cole | Frame | 5,081 | 1968 | | \$211,919 | | | | \$211,919 |
| McKay Park- Restrooms | 1605 Sunset Lake Rd. | Cole | Frame | 409 | | | \$2,000 | | | | \$2,000 |
| Miller Street Park- Restrooms | 916 E. Miller St. | Cole | MNC | 224 | 1998 | | \$26,010 | | | | \$26,010 |
| North Jefferson City- Pavillion | Fourth Street | Cole | NC | 4,700 | | | \$65,000 | | | | \$65,000 |
| North Jefferson City- Multipurpose Bldg. | 810 Sandstone | Cole | MNC | 6,000 | | | \$150,000 | | | | \$150,000 |
| North Jefferson City- Boat Launch Restrooms | Cottonwood Dr. | Cole | MNC | 72 | - | | \$2,000 | | 8 | | \$2,000 |
| North Jefferson City- Master Gardener's Pavillion | Third Street | Cole | NC | 400 | 2004 | | \$5,000 | | | | \$5,000 |
| Washington/ Lion's & Vivion Electrical Bldg. | 1309 Missouri. Blvd. | Cole | Frame | 146 | | | \$2,500 | | | | \$2,500 |
| Electric Bldg Scott/ Byrd Field | Business Loop 50 W. | Cole | Frame | 64 | | | \$2,500 | | | | \$2,500 |
| Edgewood Greenway- Restrooms | 3337 W. Edgewood Dr. | Cole | MNC | 418 | 1998 | | \$26,010 | | | | \$26,010 |
| Highway 54 Pump Station | 817 Braun | Cole | MNC | 496 | 2006 | | \$1,447,000 | | | | \$1,447,000 |
| WW Hyde Park Pole Barn | 2320 Hyde Park Rd. | Cole | Frame | 3,900 | 2006 | | \$30,000 | | | | \$30,000 |
| Binder Park- Concession Stand | 280 S. Binder Lake Rd | Cole | Frame | 2,090 | 2007 | | \$350,000 | \$ 15,000 | | | \$365,000 |
| Street Maintenance Bldg. | 2310 Hyde Park Rd. | Cole | Metal | | 2008 | | \$1,500,000 | | | | \$1,500,00 |
| Old Church Building | 415 Monroe St. | Cole | Brick | 2,500 | 1924 | 1972 | \$289,000 | \$ 5,000 | | | \$320,000 |

| Building Name | Address | County | Const. Type/ Desc. | Square Feet | Year Built | Year of upgrade- if <1970 | 100% Building Value | 100% Content Value | Other Prop. Description | Other Prop. Value | Total Location Value |
|--|--------------------------|--------|--------------------------|----------------|---------------|---------------------------------|---------------------------|-----------------------------|-------------------------------------|-------------------------|----------------------------|
| D. I.I.D t. | 1612 Seven Hills | Cole | MNC | 975 | 1965 | - | \$36,346 | PARTIE NAME OF THE PARTIES. | | | \$36,346 |
| Rental Property Fliff Hall | 1012 Seven milis | Gue | IIIII | - | | | | | JCTV | | |
| Lincoln University | 820 Chestnut | Cole | MNC | | 1970 | | \$0 | \$ 100,183 | equipment | | \$100,183 |
| Vivion Field Lights (\$120,000), Bleacher (\$45,000), Transformer (\$0) | 1201 Washington Park Dr. | Cole | NC | | 4 | | | | Lights, Bleacher, Transformer | \$171,666 | \$171,666 |
| Lights (\$50,000), Bleacher (\$2,400), Transformer (\$0) | Washington Park Dr. | Cole | NC | | | | | | Lights, Bleacher, Transformer | \$ 54,517 | \$54,517 |
| Duensing Field Lights (\$55,000), Bleacher (\$3,200), Transformer (\$0) | 805 Ohio St. | Cole | NC | | | | | | Lights, Bleacher, Transformer | \$ 60,551 | \$60,551 |
| Optimist Sport Complex Lights (\$150,000), Bleacher (\$8,800), Transformer (\$0) | Optimist Ct. | Cole | NC | | | | | | Lights, Bleacher, Transformer | \$165,216 | \$165,216 |
| Scott/Byrd Fields Lights (\$90,000), Bleacher (\$2,400), Transformer (\$2,500) | Business Loop 50 West | Cole | NC | | | | | | Lights, Bleacher, Transformer | \$ 98,734 | \$98,734 |
| Wisch, Williams, Kremer Fields Lights (\$180,000), Bleacher (\$15,000), Transformer (\$10,000) | Binder Lake Rd. | Cole | NC | | | | × | | Lights, Bleacher, Transformer | \$205,000 | \$205,000 |
| Restroom, Laundry, Shower House | 114 Campground Ct. | Cole | Frame | 1,425 | 1990 | | \$86,082 | | | | \$86,082 |
| Shikles Recreation Center | 1200 Linden Dr. | Cole | Brick | 12,010 | 1965 | | \$1,246,920 | \$ 10,000 | | | \$1,256,920 |
| McClung Park- Custodian Residence | 940 McClung Park Dr. | Cole | Frame | 1,002 | 1965 | | \$35,472 | | | , | \$35,472 |
| Indoor Pavillion | 931 McClung Park Dr. | Cole | Frame | 4,800 | 1975 | | \$161,404 | \$ 5,200 | 2 | | \$166,606 |

| Building Name | Address | County | Const. Typel Desc. | Square Feet | Year Built | Year of upgrade- if <1970 | 100% Building Value | 100% Content Value | Other Prop. Description | Other Prop. Value | Total Location Value |
|--|--------------------------|----------|---|----------------|---------------|---------------------------------|---------------------------|--------------------------|----------------------------|-------------------------|----------------------------|
| Riverside | | | MNC | 750 | 1970 | | \$832,320 | | | | \$832,320 |
| Pumping Station | 2001 Edwards | Cole | 100000000000000000000000000000000000000 | | 100000000 | | - | | | | \$40,000 |
| rwin Pumping Station | 105 Irwin Rd. | Cole | MNC | 40 | 2005 | | \$40,000 | | * | | \$104,040 |
| Bar Screen | 631 E. State St. | Cole | MNC | 500 | 1970 | | \$104,040 | | | | 0104,040 |
| Southridge Pumping Station | 2021 Oakleaf Dr. | Cole | MNC | 600 | 1970 | | \$104,040 | | | | \$104,040 |
| Cole Junction Pump Station | 1205 Rockhill Rd.Hwy 179 | Cole | MNC | 2,000 | 1975 | | \$1,872,720 | | | | \$1,872,720 |
| Dover Pumping Station | 241 Dover Street | Cole | MNC | 500 | 1970 | | \$187,272 | | | - | \$187,272 |
| Windriver Pumping Station | 2015 Windriver Dr. | Cole | MNC | 500 | 1970 | | \$52,020 | | | | \$52,020 |
| Sylvan Hills Pumping Station | 1901 Sylvan Hills | Cole | MNC | 500 | 1970 | | \$36,414 | | | | \$36,414 |
| Westview Pumping Station | 5611 South Brooks | Cole | MNC | 500 | 1970 | | \$156,060 | | | | \$156,060 |
| Gun Club Pumping Station | 4606 Green Valley Dr. | Cole | MNC | 500 | 1970 | | \$31,212 | | | | \$31,212 |
| Binder Park Pumping Station | 114 Campground Ct. | Cole | MNC | 500 | 1970 | | \$156,060 | | | | \$156,060 |
| Cedar City Pumping Station | 913 Cedar City Dr. | Callaway | MNC | 500 | 1970 | | \$156,060 | \$ 175,000 | | | \$331,060 |
| Oak Hills Park - Old Irrigation Pump House | 932 Ellis Blvd. | Cole | NC | 500 | 1970 | - | \$36,414 | | | | \$36,414 |
| Oak Hills Park - Well House | 932 Ellis Blvd. | Cole | FR | 500 | 1970 | - | \$12,485 | | | | \$12,485 |
| Oak Hills Irrigation Pump Station | 932 Ellis Blvd. | Cole | Frame | 500 | - | 1 | \$95,000 | | | | \$95,000 |
| Covington Gardens Pumping Station | 4118 Route C Hwy. | Cole | MNC | | 1999 | 1 | \$156,060 | | | | \$156,060 |
| Hayselton Pumping Station | 1516 Hayselton Dr. | Cole | -13 | - | | 1983 | \$75,000 | | | | \$75,000 |
| St. Martins North Pumping Station | 132 Christopher Ln. | Cole | - 14 | - | 1994 | - | \$60,000 | | | | \$60,000 |
| St. Martins South Pumping Station Wakoda Woods | 7605 Clarose | Cole | -15 | - | 1994 | - | \$60,000 | - | | | \$60,000 |
| Pumping Station | 5329 Algoa Rd. | Cole | 14 | - | - | | \$60,000 | - | | | \$60,000 |
| Water Tower | 712 Sandstone | Callaway | NC | | 1965 | - | \$52,020 | | - | - | \$52,020 |
| Well, Chlorine Bldg. & Pump House #1 | 712 Sandstone | Callaway | MNC | 150 | 1980 | - | \$2,096 | \$ 10,404 | | - | \$12,500 |
| Well & Pump House #2 | 917 Hibernia | Callaway | FR | 200 | | | \$2,096 | \$ 31,212 | | | \$33,308 |
| Animal Control | 919 E. Miller | Cole | MNC | 3,135 | | | \$238,883 | \$ 50,000 | | | \$288,883 |
| Fire Station #1 | 621 W. High | Cole | MNC | - | 1975 | | \$650,199 | \$ 126,610 | | \$ 3,121 | |
| Fire Station #3 | 2104 Industrial Dr. | Cole | MNC | 4,430 | - | | \$261,421 | \$ 22,000 | Tower | \$ 5,202 | |
| Fire Station #2 | 2400 E. McCarty | Cole | MNC | 4,050 | _ | _ | \$261,034 | \$ 22,000 | - | 1 | \$283,034 |
| Fire Station #4 | 820 Ellis Blvd. | Cole | MNC | 3,015 | | | \$197,587 | \$ 8,415 | | \$ 10,404 | \$216,406 |
| Fire Station #5 | 1005 Fairgrounds Rd. | Cole | MNC | 5,500 | 1991 | - | \$345,677 | \$ 15,606 | - | - | \$361,283 |
| Hyde Park Training Facility-Towe | er 2304 Hyde Park Rd. | Cole | MNC | 2,500 | 1993 | | \$300,000 | \$ 1,040 | | | \$301,040 |

| Building Name | Address | County | Const. Typel Desc. | Square Feet | Year Built | Year of upgrade- if <1970 | 100% Building Value | 100% Content Value | Other Prop. Description | Other Prop. Value | Total Location Value |
|---|---------------------------------------|----------|--------------------------|----------------|---------------|---------------------------------|---------------------------|--------------------------|--------------------------------------|-------------------------|----------------------------|
| Runway Lights 45 X | 500 A | Callaway | NC | | 1996 | | | | Runway Lights 30 X \$28- Short | \$ 1,260 | \$1,260 |
| | 500 Airport Rd. 500 Airport Rd. | Callaway | NC | | 1973 | | | | Taxi Lights 50 X \$28 | \$ 5,824 | |
| | 5525 Henwick Ln. | Cole | MNC | 1,800 | 1960 | | \$86,557 | | | | \$86,557 |
| ion Pavillion - Ball Concession | 314 S. Binder Lake Rd. | Cole | Frame | 1,070 | 1980 | | \$7,691 | \$ 1,561 | | | \$9,251 |
| 10010011100 | Henwick Ln. | Cole | Frame | 4,268 | 1960 | | \$36,612 | | | | \$36,612 |
| #1 Wood Frame Ut. Shed | Custodians Residence | Cole | Frame | 530 | 1960 | | \$3,121 | 7 | | | \$3,121 |
| #2 Wood Frame Ut. Shed drive thru | Custodians Residence | Cole | Frame | 720 | 1960 | | \$3,121 | | | | \$3,121 |
| Binder Park | 5840 Rainbow Dr. | Cole | MNC | 1,280 | 1960 | | \$63,030 \$80.000 | | | | \$63,030 |
| Steiner House Outbuilding #1 Steiner Smokehouse | Steiner Residence | Cole | Frame Frame | 306 | 1960 | | \$10,404 | 1 | | | \$10,404 |
| Outbuilding #3 Steiner Garage | Steiner Residence | Cole | Frame | 416 | 1960 | | \$5,202 | | | | \$5,202 |
| Outbuilding #4 Steiner Brooder House | Steiner Residence | Cole | Frame | 165 | 1960 | | \$2,601 | | - | | \$2,601 |
| Outbuilding #5 Steiner Machine Shed | Steiner Residence | Cole | Frame | 372 | 1960 | | \$3,121 | | - | | \$3,121 |
| Outbuilding #6 Steiner Park Storage Shed | Steiner Residence | Cole | Frame | | 1960 | | \$18,727 | | | | \$18,727 |
| Outbuilding #7 Steiner Chicken House | Steiner Residence | Cole | Frame | 685 | 1960 | | \$20,808 | | | | \$20,808 |
| Outbuilding #8 Steiner Barn | Steiner Residence | Cole | Frame | 5010 | 1960 | - | \$52,020 | | | - | \$52,020 \$1,144 |
| Outbuilding #9 Binder Park | Steiner Residence 5840 Rainbow Dr. | Cole | Frame | | 1960 | | \$1,144 | | | | \$97.074 |

| Building Name | Address | County | Const. Typel Desc. | Square Feet | Year Built | Year of upgrade- if <1970 | 100% Building Value | Con | tont ! | Other Prop. Description | Other Prop. Value | Total Location Value |
|--|---------------------|----------|--------------------------|----------------|---------------|---------------------------------|---------------------------|-------|--------|--|-------------------------|----------------------------|
| Metal Storage Trailer- | N 00 | Cole | Metal | 4,896 | 2002 | | \$3,519 | S 1 | 0,000 | | | \$13,519 |
| Office from the contract of th | Next to 8B | Cole | IVICIAI | 4,000 | | | | - | | | | |
| torage Shed #3 ire Department | 2104 Industrial Dr. | Cole | PC | | 1980 | | \$5,333 | \$ | 1,000 | | | \$6,333 |
| rill Tower/Old Fire | 915 E. Miller | Cole | MNC | | 1933 | | \$108,863 | \$ | 5,202 | | | \$114,065 \$1,100,000 |
| D Storage Building | Hyde Park Rd. | Cole | NC | 10000 | 2006 | | \$550,000 | \$ 55 | 0,000 | | | \$1,100,000 |
| Street Division/Coll. | 831 E. Miller | Cole | MNC | 1,105 | 1975 | | \$17,973 | | | | | \$17,973 |
| Street Division- | 901 E. Miller | Cole | FR | 250 | 1966 | | \$1,730 | | | | | \$1,730 |
| - Control of the Cont | 301 L. Millel | 100.0 | | | | | | | | | | |
| Street Division Building Maintenance | 901 E. Miller | Cole | MNC | 7,500 | 1966 | - | \$161,601 | \$ | 8,217 | | | \$169,818 |
| Street Division Storage | 831 E. Miller | Cole | MNC | 2,666 | 1982 | | \$16,911 | 6 4 | 75.000 | | | \$16,911 \$282,100 |
| Salt Storage Building | 831 E. Miller | Cole | MNC | 5,300 | 1997 | - | \$107,100 | 1 | 75,000 | - | - | \$305,000 |
| Salt Storage Building | 2330 Hyde Park | Cole | Metal | 5,300 | 2003 | - | \$1,040,400 | 1 | 04,040 | - | | \$1,144,440 |
| Hyde Park Building | 2320 Hyde Park | Cole | MNC | | 1999 | - | \$1,040,400 | 9 1 | 04,040 | | | |
| City Hall | 320 E. McCarty | Cole | FR | 17,164 | 1986 | | \$1,848,113 | \$ 6 | 20,407 | | | \$2,468,520 |
| City Hall Annex | 427 Monroe | Cole | MNC | 4,632 | 1987 | | \$984,300 | \$ | 15,300 | | | \$999,600 |
| Transit & Central Maint. Office | 820 E. Miller | Cole | NC | 10,340 | 1982 | | \$676,260 | s | 54,491 | | | \$730,751 |
| Bus Barn | 820 E. Miller | Cole | Metal | | 1982 | | \$75,000 | | 20.200 | | | \$75,000 \$155,899 |
| Bus Wash | 820 E. Miller | Cole | NC | 1,342 | | - | \$25,000 | 2 1 | 30,899 | | | \$31,212 |
| Fuel & Island | 820 E. Miller | Cole | NC | | 1982 | 1999 | \$31,212 | - | | | | \$95,672 |
| Bus Depot | 620 W. McCarty | Cole | MNC | 1,345 | 1987 | | \$95,672 | - | | | | 933,012 |
| Jefferson Parking Garage | 209 Jefferson St. | Cole | FR | 5,000 | 1975 | | \$809,014 | | | | | \$809,014 |
| Madison Parking Garage | 201 Madison | Cole | FR | 145,064 | 1975 | | \$3,246,389 | \$ | 4,552 | | | \$3,250,94 |
| Airport Terminal | 500 Airport Rd. | Callaway | MNC | 4,608 | 1966 | | \$356,878 | \$ | 7,312 | | | \$364,190 |
| Airport Control Tower | | Callaway | MNC | 576 | 1973 | | \$50,000 | s | 52,020 | | | \$95,921 |
| and Equipment Airport Maintenance | 1231 Cooper Dr. | | - | 1.500 | | | \$44,712 | s | 6,242 | | | \$50,954 |
| Building | 517 Aviation Dr. | Callaway | - | | 1969 | | \$68,633 | \$ | 4,162 | | | \$72,794 |
| Airport Pavitt Building | 916 Hibernia | Gallaway | NO. | 2,700 | 1.000 | 1 | | 1 | | Tower | | |
| Beacon on Airport Control Tower | 1231 Cooper Dr. | Callaway | NC | | 1973 | | | - | | Beacon | \$ 1,347 | \$1,347 |
| Precision Approach Path Indicators | 500 Airport Rd. | Callaway | | | 1996 unkr | | | | | Visual Approach Slope Indictor (4) Vast Transformers | | \$15,606 \$41,616 |
| Transformers | 500 Airport Rd. | Callaway | / NC | | unki | - | | - | | Runway | 7 | 7 |
| Runway Equipment | 500 Airport Rd. | Callawa | / NC | | unkr | 1. | | - | | Equipment Runway | \$ 1,457 | \$1,457 |
| Runway Lights 76 X \$60 (Long Runway) | 500 Airport Rd. | Callawa | y NC | | 1996 | 5 | | | | Lights 92 X \$60-Long | \$ 4,560 | \$4,560 |

| Building Name | Address | County | Const. Typel Desc. | Square Feet | Year Built | Year of upgrade- if <1970 | 100% Building Value | 100% Content Value | Other Prop. Description | Other Prop. Value | Total Location Value |
|---|------------------------|--------|--------------------------|----------------|---------------|---------------------------------|---------------------------|--|----------------------------|-------------------------|----------------------------|
| | D. I. D. | Cole | Frame | 3,811 | WANTED BOOK | -M-30-239-2 | \$100,000 | A STATE OF THE PARTY OF THE PAR | | | \$100,000 |
| Of Official of Accordance | Rainbow Dr. | Cole | Frame | 6.384 | 1965 | | \$67,238 | | | | \$67,238 |
| 7 Duni j Duni | Foreman's Residence | Cole | Frame | | 1965 | | \$520 | | | | \$520 |
| z omen e et zamanig | Foreman's Residence | Cole | Frame | | 1965 | | \$3,121 | | | | \$3,121 |
| 0 1110 001 00103 | Foreman's Residence | Cole | Frame | -1 | 1965 | | \$3,121 | | | | \$3,121 |
| T THE THE THE | Foreman's Residence | Cole | NC | 1 | 1965 | | \$24,912 | | | | \$24,912 |
| o cargo mounto | Foreman's Residence | | | | 1965 | | \$520 | | | | \$520 |
| 6 Small Storage Shed | Foreman's Residence | Cole | Frame | 1/3 | 1900 | | 19020 | 1 | | | 1 |
| Binder Park Ball Field- Metal Storage Bldg. | 412 Binder | Cole | NC | 1,208 | 1965 | | \$23,085 | \$ 5,202 | | | \$28,287 |
| Binder Park- Wisch Restroom/Concession | 314 S. Binder Lake Rd. | Cole | Frame | 2,125 | 1982 | 2006 | \$250,000 | | | | \$250,000 |
| - 11 01 | 1200 Binder Lake Rd. | Cole | Freme | 2.320 | 1980 | | \$16,987 | \$ 2,601 | | | \$19,588 |
| Tackle Shop | 1200 Binder Lake Rd. | | Post and | | | | \$15,000 | | | | \$15,000 |
| Tractor Shed | Custodians Residence | Cole | Beam | 1,008 | | | \$15,000 | | | | |
| Open Pavillion | 200 Campground Ct. | Cole | Frame | 3,041 | 1980 | | \$32,816 | | - | | \$32,816 |
| Pavillion Restroom | Campground Ct. | Cole | Frame | 644 | 1980 | | \$15,543 | | | - | \$15,543 |
| Historic-Caretakers House | 401 Ellis Porter Dr. | Cole | MNC | 5,070 | 1950 | | \$218,944 | | | | \$218,944 |
| Pool Equipment Building | 300 Ellis Porter Dr. | Cole | Frame | 1,497 | 1968 | | \$21,224 | | | | \$21,224 |
| Bath House | 320 Ellis Porter Dr. | Cole | MNC | 2,261 | 1978 | | \$140,600 | \$. 3,768 | 3 | | \$144,368 |
| Ellis Porter/Riverside Park OSC Restrooms, Concession & Storage | 1824 Optimist St. | Cole | Frame | 1,745 | | | \$40,000 | \$ 10,000 |) | | \$50,000 |
| Ellis Porter/Riverside Park | Restroom | Cole | Frame | 500 | 1975 | | \$15,543 | - | | | \$15,543 |
| Ellis Porter/Riverside Park | Storage Shed | Cole | Frame | 500 | 1975 | | \$1,040 | | | | \$1,040 |
| Oak Hill/Hough Park Club House | 932 Ellis Blvd. | Cole | Frame | 3,384 | 1965 | | \$130,407 | \$ 26,01 | 0 | | \$156,417 |
| Chemical Cart Storage | 932 Ellis Blvd. | Cole | NC | 1,500 | 1981 | | \$30,182 | \$ 10,40 | 4 | | \$40,586 |
| Golf Course Shed | 932 Ellis Blvd. | Cole | MNC | 3,000 | 1975 | | \$53,497 | \$ 26,01 | 0 | | \$79,507 |
| Stone Storage Building | 932 Ellis Blvd. | Cole | MNC | 784 | 1975 | | \$11,085 | \$ 5,20 | 2 | | \$16,287 |
| Parks Maintenance Center | 935 Ellis Blvd. | Cole | MNC | 10,050 | 1975 | 2008 | \$265,000 | \$ 85,00 | 0 | | \$350,00 |

Jefferson City Owned Vehicles Cole County / Jefferson City Natural Hazard Mitigation Plan Appendix F 12

| \vdash | | TO | | | 407 624 20 | | | 803 801 805 | | | | | | DB | | | | |
|------------------------------|-------------------|--------------|-------------------------|----------|---|------------------------------------|------------|--|------------|--|------------|-------------------------|-----------|--|--------------------|-----------|--------------------------|-----------|
| PAGE | | PHY | CH1 | | VAI VAI AI3 | | | AR1 AR1 AR1 AR1 | | GESSES | | CH2 | | | CWI | | CH2 | |
| | | XX | 2006 | | 220099 200099 200099 200099 | 2005 2006 2009 | | 2005 2005 2007 2007 2007 | | 220005 20005 20005 20005 20005 | | 2005 | | 2002 2003 2005 | 2005 | | 2006 | |
| | | MM | ω | | WUU841 | 04L | | 00044 | | ттттт | | 3 | | 122 | 0 | | М | |
| HR DEPT | ASSETS/HR_VEHICLE | COST | 6,000.00 | 6,000.00 | 21,245.02 19,922.00 28,499.00 28,397.00 1,553.00 | 979 | 273,264.59 | 19,522.19 19,522.19 20,666.99 20,487.00 | 100,688.37 | 21,538.60 21,538.60 21,538.60 21,538.60 | 109,260.40 | 22,938.60 | 22,938.60 | 16,994.00 | 137.0 | 88,574.00 | 23,106.00 | 23,106.00 |
| | | SERIAL# | 2FMZA504X1BB21800 | TOTAL | 1GBHK34N2ME162021 3B7KE526Z1XM543146 19YB528648 1HISENZR3MH381121 1FDAF57P55EC24745 | LO6715A478717 1HTWDAAR09J177594 | TOTAL | 1GCEK19V35Z241297 1GCEK19VX5Z240602 1GCEK19V85Z242466 1GCEK19C37Z593941 1GCEK19C98Z256552 | TOTAL | 1FMZU72K95ZA58304 1FMZU72K65ZA58311 1FMZU72K45ZA58310 1FMZU72K35ZA58315 2GCEK13Z361286679 | TOTAL | 1FMZU72K25ZA58290 | TOTAL | 1GCEK14V72Z218852 1GCHK24UX4E225492 1GCHK34G15E244014 | P232G 0038 09648KF | TOTAL | 2GCEK13Z761290105 | TOTAL |
| LISTING Sorted by Department | | CLS LOC NAME | MVN ADMINISTRATION | | MVT AIRPORT MVF MVF MVF MVF MVF MVP MVF MVF | MIM MVA MVT | | MVP ANIMAL RESCUE MVP MVP MVP | | MVT MVT MVT MVT MVT MVT | | MVT CD-PUBLIC WORKS-ADM | | MVP CENTRAL MAINTENANCE MVP MVP MVP | MVO | | MVP CODE ENFORCEMENT-ADM | |
| | | T TYP | \mathbb{Z} | | EEEEEE | EEE | | ZZZZZ | | EEEEE | | Σ | | EEEE | Σ | | M | |
| VEHICLE | | STAT | М | | мммнчн | | | ппппп | | нннн | | Н | | mmHH | | | Н | |
| 08:37:29 | | DESCRPTION | 01 2001 FORD WINDSTAR M | | 0 1991 CHEVROLET C30 P 0 1999 DODGE RAM P/U T 0 1999 KAWSAKI UTILITY 0 INVERNATIONAL FIRE T 0 2005 FORD FS50 TRUCK 1 TOOL BOX, MOUNTING B | 0 2009 INT'L DUMP TRUC | | 0 2005 CHEVROLET SILVE 0 2005 CHEVROLET SILVE 0 2005 CHEVROLET SILVE 0 2007 CHEVROLET SILVE 0 2008 CHEVROLET SILVE | | 0 2005 FORD EXPLORER X 0 2005 FORD EXPLORER X 0 2005 FORD EXPLORER X 0 2005 FORD EXPLORER X 0 2006 CHEVROLET SILVE | | 0 2005 FORD EXPLORER X | | 0 2002 CHERVROLET SILV 0 2004 CHEVROLET SILVE 0 2005 CHEVY SILVERADO 1 KNAPHEIDE SERVICE BO | 2007 | | 0 2006 CHEVROLET SILVE | |
| 06/03/10 | | ET. | 015015-0 | | 012077-00 014138-00 014553-00 016613-00 016789-00 016789-00 | 7333 | | 016699-00 016700-00 016701-00 017728-00 017768-00 | | 016720-00 016721-00 016722-00 016723-00 017297-00 | | 016710-00 | | 015689-00 016343-00 016772-00 016772-01 | | | 017303-00 | |



| 7 0 | | LEP ENV GLJ DPG | 561 649 650 717 |
|--|--|--|--|
| PAGE PHY LOC | 222222 | 5255555 6555555555555555555555555555555 | S31112S1111 XANX ANX ANX S1111 |
| YY | 00000000000000000000000000000000000000 | 220005 220005 200005 20006 20006 20006 | ###################################### |
| MM | тттттт | Dunnnnn | 111 33571740333355338881113255 |
| HR DEPT ASSETS/HR_VEHICLE COST | 21,538.60 23,106.00 23,106.00 23,106.00 23,106.00 23,106.00 | 21,538.60 21,538.60 21,538.60 23,106.00 23,106.00 23,60.00 17,431.00 23,60.00 | 3.617.061.3.4.4.1.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0 |
| SERIAL# | 1FMZU7ZK65ZA58308 1FMZU7ZK25Z88306 2GCEK13Z061Z88972 2GCEK13Z261Z88653 2GCEK13Z261Z90058 2GCEK13Z561Z91494 2GCEK13Z961Z878Z2 | 1FMZU7ZK0SZA58305 1FMZU7ZK5ZA58302 1FMZU7ZK5ZA58303 1FMZU7ZK4SZA58307 2GCEK13ZX1289613 2GCEK13Z3Z1289423 1GCEC19C97Z613322 1GCEC19C97Z613322 1GCHX29K98E164925 | 4PICTO2S6TA000559 N653326928 1BB9U1628W 1WW300F258W 1HFSDADN8FH24509 4PICTO2S4ZAA00759 4PICTO2S4ZAA00759 4PICTO2S4ZAA00759 3DNGK26U62G110965 1HFWCADR84J015155 1HFWCADR84J015155 1HFWCADR84J015155 1GBNCK13ZK6129168 2CGEK13ZK6129168 2CGEK13ZK6129168 1GONEK13ZK6129168 1GONEK13ZK6129168 1GONEK16347575976721 1GNFK16379K89242 1GNFK16379K89242 1GNFK16379K89242 1GNFK16379K89242 1GNFK16379K89242 |
| VEHICLE LISTING Sorted by Department STAT TYP CLS LOC NAME | X 1 M MVT ENGINEERING X 1 M MVT YE 1 M MVP | X 1 M MUT ENVIRONMENTAL SERVIC X 1 M MUT X 1 M MUT TE 1 M MUP | M M M M M M M M M M M M M M M M M M M |
| 06/03/10 08:37:29 V ASSET # DESCRPTION | 2005 FORD 2005 FORD 2006 CHEV 2006 CHEV 2006 CHEV 2006 CHEV | 016712-00 2005 FORD EXPLORER X 016712-00 2005 FORD EXPLORER X 016713-00 2005 FORD EXPLORER X 016713-00 2005 FORD EXPLORER X 017302-00 2005 CHEVROLET SILVE 01734-00 2007 CHEVROLET SILVE 017734-00 2007 CHEVROLET SILVE 017753-00 2008 SILVERADO CHEVR | ## 194055-01 ENGINE OVERHAUL ON E ## 194055-01 1995 PIERCE AERIAL F ## 19405-01 1995 PIERCE OLDNUT REAL F ## 19405-01 1999 PIERCE OLDNUT PHOMPE |

| m | TO T | | 369 | 681 SM WN TD | ВР | | M M M M M M M M M M M M M M M M M M M |
|------------------------|---------------------------|--------------------------|------------------------------|---|--|------------|--|
| PAGE | PHY 1.0C | | CA1 | VPR PR1 PR1 VPR | PR1 PR1 PR1 | | 33555555 55555555555555555555555555555 |
| | ΧĀ | | 1989 | 00000 | 22222 2222 2000 8765 8765 | | 40000000000000000000000000000000000000 |
| | MM | 1 | ω | ₩₩40 | 10222 | | 0.00000000000000000000000000000000000 |
| HR DEPT | ASSETS/HR_VEHICLE COST | ,763 | 32,800.00 | 17,200.00 19,957.70 21,046.00 31,726.00 | 8,875.0 8,875.0 8,675.0 | 216,733.38 | MARARAMAN MARANAMAN MARAMAN MARANAN NO COLOR COL |
| t) | SERIAL# | | S 1FDHS34HOKHC40003 TOTAL | 2W9WPK3611PO44024 2W9MPH55X3P044192 2W9WPH5564P044076 1FDWF97834EC79160 | 4XARD50A45D727909 1GCHK24U76E231088 TC1565D060154 2W9MPH6148S044592 | TOTAL | AGG055277 AGG057277 AGG05727 AGG077 |
| G Sorted by Department | S LOC NAME | oddystat MIOOMII-WEGI. T | | M PARKING K M P O | o A & K | | G PARKS-GOLF COURSE NW |
| LISTING | P CLS | MAZT | E | MVM MVM MVP MVO | MVP MVA MPK | | MLG MUW MUW MUW MUW MUW MUW MUW MUW |
| | T TYP | ≥ | Ξ | EEEEE | ZZZZ | | ZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZ |
| VEHICLE | STAT | ď | n | мчккч | | | мманананананананананананан |
| 08:37:29 VE | DESCRPTION | 408 HORD -350 | 100 DEC 1-200 200 | 2001 GO-4 POLICE THR 2003 PARKING ENFORCE 2004 SCOOTER PARKING 2004 FORD F350 WHITE 2005 STREET SWEEPER A | 000 000 000 008 | | 4 WHEEL TURP VEHICLE 2005 USED CLUB CAR G 2006 USED CLUB CAR G 2006 USED CLUB CAR G 2006 USED CLUB GOLF 2007 CART GOLF CART GOLF CART |
| 06/03/10 | ASSET # I | 010569-00 | | 015091-00 016028-00 016380-00 016540-00 | 16869-00 17320-00 17966-00 | 5 | 10101010101010101010101010101010101010 |

| 4 | | 0 | ר ר.ד.ד, ביל | | | | |
|----------------------|-------------------|--------------|---|------------|--------------------------|-----------|---|
| | | TO | MW MW MW MR BILL BILL BILL BILL BILL BILL BILL BIL | | | | LH |
| PAGE | | PHY | 00000000 | | IA1 | | PM1 VPW |
| | | YY | 0000000 | | 2006 | | $\begin{array}{c} u_1 u_1 u_1 u_1 u_1 u_1 u_1 u_1 u_1 u_1$ |
| | | MM | пптттт | | S | | 1100011 0011044711788888188898001 |
| HR DEPT | ASSETS/HR_VEHICLE | COST | | 185,000.00 | 13,525.52 | 13,525.52 | 4014 / 1990 # 1992 # 19 |
| | | SERIAL# | PR0826919974 PR0826919976 PR0840968910 PR0818901869 CF0811884654 PR0838965333 PY0830954835 | TOTAL | | TOTAL | ZXK5171831 ZGBS7HRJ831 ZGBS7HRJ831 ZAK54192 ZAK54192 ZAK7A21556 LIXXE50554 LIXXE |
| Sorted by Department | | LOC NAME | PARKS-GOLF COURSE | | PARKS-ICE ARENA | | PARKS-PARK MAINTENAN |
| LISTING | | CLS | MOW MOW MOW MOW MOW MOW MOW | | MVO | | MYCA MYCA MYCA MYCA MYCA MYCA MYCA MYCA |
| | | TYP | ZZZZZZZ | | Σ | | <u>22222222222222222222222222</u> |
| VEHICLE | | STAT | нананан | | Н | | миниминиминиминиминиминиминиминиминин |
| 08:37:29 | | # DESCRPTION | -00 GOLF CART -00 GOLF CART -00 2008 PRECEDENT GOLF | | -01 REPAIRS & UPGRADES T | | 199 DODGE PLOKUP R 100 199 LORGENDLE TRANSMISSION 101 199 CHEVROLET C70 K 101 199 CHEVROLET CRANSMISSION 199 CHEVROLET CRANSMISSION 199 CHEVROLET CRANSMISSION 1997 FORD TRANSMISSION 1998 CHEVY ONE TON P 1999 CHEVY TRANSMISSION TRUCK 1999 CHEVY TRANSMISSION TRUCK 1999 CHEVY TRANSMISSION 1998 CHEVY TRUCK 1999 CHEVY TRUCK 1990 CHEVY TRUCK 19 |
| 06/03/10 | | ASSET | 0184442 01884443 01887893 01887991 0187991 | | € 09003-01 | | ### 10000000000000000000000000000000000 |

| ហ | | OL | | BIL | BL | | | | |
|----------------------|-------------------|------------|--|---|---|--------------|--|-----------|-------------------------|
| PAGE | | PHY | V V V V V V V V V V V V V V V V V V V | VPK VPK VPM VPM | VPK VPM VPM VPM | | VPK VPK VPK VPK | | CH2 |
| | | λλ | MALATA MARKARARARARARARARARARARARARARARARARARAR | 000000 | 000000 | | 220992 200993 200993 20093 | | 2005 |
| | | MM | RWWW41401088000071WW44W00 | 0000 | 08889 | | 10 10 10 10 10 | | 3 |
| HR DEPT | ASSETS/HR_VEHICLE | COST | 8 222222222222222222222222222222222222 | 000000 | 000000 | 1,314,001.29 | 6,543.00 16,063.00 6,879.00 7,100.00 18,485.00 | 55,070.00 | 22,938.60 |
| | | SERIAL# | FDNK64P4MVA12 IGCHKK44U36E20 IGCHKK44U36E20 IGCHKC44D6E20 IGCHKC4D6E20 IFDNF06E20 IGCHC06E20 1FTNF21518EE22531 1HTMMAAN79H095888 1FDAF56KX8EE36368 1FTHF26H2VEA95732 1FDYR72C2RVA52458 1HTSDAAN5TH251554 | 1FTSW30S3YED34774 1FTHF26H4VEA95733 JJG0169478 9NB01017 & 3WL 44701 | TOTAL | 17TB507685 UGVPA57680 UGCGXX037 UGCDG15Z1RF177807 ZD4GP44L67R306709 | TOTAL | 1FMZU72K65ZA58289 |
| Sorted by Department | | LOC NAME | PARKS-PARK MAINTENAN | | | | PARKS-RECREATIONAL | | PLANNING |
| | | CLS I | MVT | MVT MVT MVT MVT | MVP MVA MVA MVA | | MVV MVN MVN MVN | | MVT F |
| LISTING | | TYP | 2222222222222222222 | | EEEEE | | EEEEE | | Σ |
| VEHICLE | | STAT | | | | | ммммн | | Т |
| 08:37:29 | | DESCRPTION | 1991 F00D F600 2006 CHEVNOLET 3/4 T 2006 CHEVNOLET 3/4 T 2006 CHEVNOLET 3/4 T 2006 CHEVNOLET 3/500 2006 CHEVNOLET 3/500 2006 CHEVNOLET 3500 2006 CHEVNOLET 3500 2006 F00D F600 FWER 2006 F00D F600 FWER 2007 F00D F100 WHE 2008 F00D F450 FLATB 2008 F00D F450 FLATB 2008 F00D F450 FLATB 2008 F00D F450 FLATB 2008 F00D F450 FME 2008 F00D F450 FLATB 2009 F00D F450 F140 2007 WASSEY FERGUSON 2007 FERGUSON | 0 2008 FORD F-250 PICK 2009 DUMP TRUCK 0 FORD UTILITY TRUCK 10 1997 FORD 4X4 PICKUP 10 1994 FORD UN7000 FLU 10 1995 IHC 4900 DT466 | 2000 FORD F350 CREW 0 1997 FORD 444 DICKUP 0 1992 CASE DIESEL POW 10 1987 CAT IT LOADER W 10 HOULE AGRICULTURAL M | | NO KAWASAKI 2510 4X4 MU 01997 FORD RANGER PIC 01 JOHN DEER GATOR 6X4 01 1994 CHEVROLET MAROO 01 2007 DODGE GRAND CAR | | 10 2005 FORD EXPLORER X |
| 06/03/10 | | ASSET # | 00000000000000000000000000000000000000 | 446666 | 000000 | | 013206-0 013509-0 014376-0 015761-0 | | 016709-00 |

```
991
                                               PD1
PD1
             XX
                MM
       ASSETS/HR_VEHICLE
 HR DEPT
                     TOTAL
VEHICLE LISTING Sorted by Department
08:37:29
06/03/10
```



| 7 | | TO | | DB | | SW- SW- 512 | 701 701 701 | 671 690 692 | MM 60 | | 725 | 727 | | CP | | លល |
|--------------------------------------|-------------------|-----------------------|--------------------|---|---------|---|---|--|---|------------|--|-------------------|--|--|--|-----------------------------|
| 田 | | PHY | PD3 | ED3 I VPD | j | | VWW 6 | | | | | | 222 | | | 口口 |
| PAGE | | CE | PI | Z2222 | > | | | | ta otestica | | 0000 | 555 | 2000 | 082 082 082 082 | | SSS |
| | | YY | 000 | 000000000000000000000000000000000000000 | | 119884 | 200000 00000 200000 200000 | 000000 | 7777 0000 0000 7777 | | 2003 | 2003 | 2000 | 22222222222222222222222222222222222222 | 2008 | 2008 |
| | | MM | 90 | onooood H | 0 | H 10 | 40000 | 00700 | 000m | | m 07 · | 44 | 4 0 H | 00000 | 1032 | 40 |
| HR DEPT | ASSETS/HR_VEHICLE | COST | 0,000.0 | 20000000000000000000000000000000000000 | 3,978.1 | 17,346.75 29,269.00 15,506.00 52,250.00 | 18,421.00 78,765.00 44,819.00 31,617.00 | 23,741.00 23,579.00 108,303.00 128,629.00 | O di di | 689,804.20 | 312.6 | 242 | 0.00 | 1,396.00 36,858.00 27,535.00 19,727.00 21,246.00 | 1733.0 | 559.0 |
| | | SERIAL# | LC | 457CA0759401020880 2FAHP71V59X139708 2FAHP71V39X139704 2FAHP71V39X139706 2FAHP71V19X139706 2FAHP71V39X139706 | F | 1GBJ7D1B9EV141882 1GBL7D1Y9FV105754 1FTHF26HORNA96013 1FDYU82E7SVA28586 | 174FJZ8SPWL252016 1M2N17973HA005215 1HTSDANGZH681101 1FDAFS7FZXEE52228 | LPUWWSTXIELZ. 1153 3B7KF26691M548043 1GBJG31R111131601 1FVABUCSX2HU84424 1FVHBXCS82HJ74037 | 1FTRX17W12KC42306 1FTWF33F32E019762 1B7GG16X92S615979 | TOTAL | 1FTRX18WX3NB39349 1GCHK24103E251555 | 1GCHK29U63E283705 | 2FZAATBS24AM57813 1FTSF31P54EC24555 | 1FDAF57P24BC79166 1GCHK29D06E205280 1GCHX24U56E215228 1GCEK19C48Z231350 | 3D7K525A98G191040 2FZHATDCX7AZ52781 | 080355 JK1AFCE138B554200 |
| VEHICLE LISTING Sorted by Department | | STAT TYP CLS LOC NAME | ΣΣ | M MVP MVH MVH MVH MVH MVH MVH | | 3 M MVT SEWER 3 M MVT 3 M MVT 3 M MVT 3 M MVT | EEEE | EEEEE | EEE | | ZZZ | EES | EZZZ | MVP MVP MVP MVP MVP MVP | EEE | ΣZ |
| 06/03/10 08:37:29 VEHI | | PTION | 7794-00 1984 DODGI | 018771-00 EMERGENCY RESPONSE T 018772-00 2009 CROWN VICTORIA 018773-00 2009 CROWN VICTORIA 018773-00 2009 CROWN VICTORIA 018773-00 2009 CROWN VICTORIA 018775-00 2009 CROWN VICTORIA | | 004636-00 1984 CHEVY DUMP TRUC 008204-00 1984 CHEVY MODIAR BO 012799-00 1994 FORD 3/4 TON TR 012948-00 1995 FORD DUMP TRUCK 043602-01 UTILITY BED | 44065-00 1998 44073-00 1988 500000000000000000000000000000000000 | 5046-00 5210-00 5211-00 5212-00 500 | 5724-00 200 5727-00 200 5745-00 200 | | 5-00 2003 8-00 2003 8-01 TOMM | 5-00 2003 | 2-00 2004 3-00 2004 | 016428-00 20041 PORD F550 (WHIT PORTS PORT | 1-00 2008 DODG -00 2007 F802 | -00 KAWASAKI |

| TO | ES | WW WW WW | | 590 590 590 | - | mmn | 200 | 000 | 000 | 0 | 714 | LA 742 | 738 | | | | |
|---------------------------|---|---|--|--|---|--|---------------------------------------|--|---|--|--|--|---|--|--|---|--|
| PHY | WW6 | VWW WWP WW WW WW1 WW1 WW1 WW6 VWW | | VSD VSD VSD VSD VSD VSD | SD2 VSD | VSD | VSD | VSD | VSD | VSD | VSD SD2 | SD2 VSD | | USD | VSD SD3 | SDZ | |
| ΧX | 2009 | 00000000 00000000 00000000 844480000 | | 1111110 0000000 00000000 00000000 | 1998 | 0000 | 2000 | 2000 | 2001 | 2001 | 2007 | 2002 | 2003 | 2003 | 2004 | 2004 | 2004 |
| MM | 90 | W477777 | | 004977 | 60 | 000 | 100 | 1014 | 44 | 100 | 0 9 | 40 | 102 | 107 | 711 | 104 | 10 |
| ASSETS/HR_VEHICLE COST | 84,567. | 22 / 44 / 45 / 45 / 45 / 45 / 45 / 45 / | 212,178.80 | 29,269.00 31,991.00 42,462.00 9,615.10 3,295.00 | 45,459.00 | 34,834.00 | 34,834.00 | 34,834.00 | 35,320.00 | 10,323.00 | 42,819.00 | 32,366.45 | 61,238.00 | 7,768.86 | 2,761.11 | 38,212.94 | 8,550.00 |
| SERIAL# | 21648 1GCHK43K99F130905 | 101AL 17DGF31P73EC43392 2FTRX18W4CA54370 1FDSF55P64EC79165 4XARD50A63D436387 1GET8C4385F530480 1FTSF71P76ED67466 1FTSF71P76ED67466 1FTSF71P76ED67727 | TOTAL | 1GBL701Y9FV105754 ZFDLF47G6LD386146 1FTHF25H9VEB42630 1HTSHADR7WH493463 | 1HTSHADR4XH625757 | 1HTSDAAR2YH230817 1HTSDAAROYH230816 1HTSDAAR9YH230816 | 1HTSDARX1H331027 1HTSDAAR81H331026 | 1HTSDAAR11H331028 3B6KF26Z71M550856 | 1HTSDAAR32H410933 | 95228 #242 | 1HTWDAAR33J0714 | 1FDXF46X02ED12981 1FDAF56P73ED35439 | JJG0288312 1HTWHADT14J092512 | 0930-1039 49HAADBV34DM80792 | 4JLHB142X4GLM6002 1FDAF57P94EC79178 | 1FDAF57P94EC79178 1FDAF57P25WEB07110 | 933959-2004 1HTWHAZT65J127054 |
| TYP CLS LOC NAME | M MVP SEWER-WWCSM M MVP | M MVP SEWER-WWTP M MVT M MVO M MVD M MVP M MVP M MVP M MVP M MVP | | | | | | | | | | | | | | | |
| STAT | H | мммнннн | | | | | | | | | | | | | | | |
| SSET # DESCRPTION | 118776-00 2009 KUBOTA MIDDI EX 118798-00 2009 3/4 TON PICKUP | 16007-00 2003 FORD F350 ONE T 164317-00 2004 FORD F350 XL WH 16443-00 2004 FORD F350 TRUCK 16443-00 2003 POLARIS FARSH 117318-00 2005 CHEVROLET SPREA 117318-00 2006 FORD F350 117319-00 2006 FORD F350 117319-00 FORD F350 PTRU | | 265 | 20-0 | 32-0 | 0-66 | 39-0 | 11-0 | 13-0 | 10-00-00-00-00-00-00-00-00-00-00-00-00-0 | 28-0 | 27-0 | 57-0 | 73-0 | 7-0 | 0-0 |
| | ASSETS/HR_VEHICLE ET # DESCRPTION STAT TYP CLS LOC NAME SERIAL# COST NY PHY LOC | SSET # DESCRPTION STAT TYP CLS LOC NAME SERIAL# COST NAME COST NAME SEWER-WWCSM 21648 2009 3/4 TON PICKUP 1 M MVP SEWER-WWCSM 1GCHK43K99F130905 27,688:00 2 2009 WW6 | SET # DESCRPTION STAT TYP CLS LOC NAME SERIAL# COST NM NVA SEMER-WWCSM 21648 SETIAL# COST NM LOC STAT TYP CLS LOC NAME SEMER-WWCSM 21648 STAT TYP CLS LOC NAME SEMER-WWCSM STAT TYP CLS LOC NAME SEMER-WWCSM STAT TYP CLS LOC NAME SEMER-WWCSM SEMER-WWCSM STAT TYP CLS LOC NAME SEMER-WWCSM STAT TYP CLS LOC NAME SEMER-WWCSM STAT TYP CLS LOC NAME SEMER-WWTP STAT TYP CLS LOC NAME SEMER-WWTP STAT TYP CLS LOC NAME STAT TYP TYP CLS LOC NAME STAT TYP TYP TYP TYP TYP TYP TYP TYP TYP TY | SET # DESCRPTION STAT TYP CLS LOC NAME SERIAL# COST NM NVA SEWER-WWCSM 1GCHK43K99F130905 27,688.00 2 2009 NW5 NW | PESCRPTION STAT TYP CLS LOC NAME SERIAL# COST MWA SEMEN-WWCSM LIGHK43K99F130905 27,688.00 6 2009 WW6 ES | FERTAL# DESCRPTION STAT TYP CLS LOC NAME SERIAL# COST MM VA SEWER-WWCSM 1 CCH443K99F130905 216488 21648 21648 216488 216488 216488 216488 216488 216488 216488 | Percention | PESCRPTION STAT TYP CLS LOC NAME SERIAL# | PESCRPTION STAT TYP CLS LOC NAME SERIAL# COST MAY SEMER-WWCSM LIGGERA R. S9F130905 S4,567.00 COST MAY SEMER-WWTP LIGGERA R. S9F130905 S4,7688.00 COST S6,747.23 S6,747.23 | PESCRPTION STAT TYP CLS LOC NAME SERIAL# POSCRIAL# COST NM COST COST COST NM COST COST COST COST COST COST COST COST NM COST COS | PESCRPTION STAT TYP CLS LOC NAME SERIAL# COST NM SEWER-WWCSM 1643x99F130905 S4,587.00 6 2009 WWG ES SERIAL# SERIAL# SERIAL# COST NM SEWER-WWCSM 1664x3x99F130905 S4,587.00 6 2009 WWG ES S6,000 S7,687.00 S7,687.00 S6,000 S6,000 S7,687.00 S6,000 S6,000 S7,687.00 S6,000 S6, | Color Color March Color Color March Color Colo | ## DESCRPTION STAT TYP CLS LOC NAME SERIAL# ASSETS/HR_TEHICLE | COURT MAY STAT TYP CLS LOC NAME STRIAL# COURT MAY STATE WAY STREET WAY STRIAL# COURT MAY STATE CLS LOC NAME STRIAL# COURT MAY STATE CLS LOC NAME STATE STA | ### DESCRPTION STAT TYP CLS LOC NAME SERIAL# ASSETS/HR_VHICLE COST WIND CO | ## DESCRPTION Column | DESCRIPTION STATT TYPE CLS LOC NAME SERIAL# ASSETTS/HR_VHILLE ASSETTS/HR_VHI |

38

| Q | | TO | T.A. | | 487 7112 7115 7115 7337 735 |
|----------------------|-------------------|------------------|--|--------------|---|
| PAGE | | PHY | SD3 SD3 SD3 SD3 | | 1255177 1252177 1552177 |
| | | $\Lambda\Lambda$ | ************************************** | | 222222 2220022 2220022 2220022 222022 222022 222022 222022 222022 222022 222022 222022 22202 22202 22202 22202 22202 2220 2200 2200 2200 2200 2200 2200 2200 2200 2200 2200 2200 2200 2200 20 |
| | | MM | $\overset{HH}{H}$ | | 0 W W V 4 4 4 4 |
| HR DEPT | ASSETS/HR_VEHICLE | COST | 0.000000000000000000000000000000000000 | 2,871,259.18 | 108,198.00 1088,235.00 427,947.00 857,704.50 857,704.50 |
| nent | | SERIAL# | 2GCEK13 T9 5124218 0 147187215055829 6509 1FTDNF215505829 6509 1FTDNF7215505829 6509 1FTDNF7215505829 6509 1FTDNF7215505829 6509 1FTDNF7215505829 6509 1FTDNF77P57P58246353 1FTDNF77P65826455 1FTDNF77P65826456 1FTDNF77P65826456 1FTDNF77P65826456 1FTDNF77P65826456 1FTDNF77P6326459 1FTDNF77P6326429 1FTDNF77P63264939 1FTDNF77P63264939 1FTDNF77P63264939 1FTDNF77P63264939 1FTTNF7AP632644936 1FTTNF7AP632644936 1FTTNF7AP6326644936 1FTTNF7AP63284936 | TOTAL | 1FTHF26H5PNB23011 1HVBEABM72H10943 1HVBEABM57H5140942 1FDXE455G2H494421 4UZAAZAL33XN17268 4UZAAZAL33XN17270 4UZAAZAL13XN17270 |
| Sorted by Department | | LOC NAME | TREET | | TRANSIT |
| | | CLS LC | IS MACE MACE MACE MACE MACE MACE MACE MAC | | MVR MVR MVR MVR MVR |
| ISTI | | TYP C | | | |
| TE T | | STAT I | | | |
| 7:29 VEHICLE LISTING | | CRPTION ST | ELIENROLET SILVE ELIENROLET SILVE FORD F250 4X4 FORD F250 4X4 FORD F250 4X4 FORD F250 TRUCK FORD F550 TRUCK FO | | 3/4 TON FORD TR 3 INTERNATIONAL C 3 INTERNATIONAL C 3 FORD CAPITAL BU 3 EUS CAPITAL BUS CAPITAL BUS CAPITAN BUS 35 CA 1 TRAN BUS 35 CA 1 |
| 08:3 | | DESC | 0.000000000000000000000000000000000000 | | 3330000 000000 000000 0000000000000000 |
| 06/03/10 | | ASSET # | 00000000000000000000000000000000000000 | | 012640-00 015823-00 015824-00 015825-00 016039-00 016040-00 |

```
RTRE
                     ASSETS/HR_VEHICLE
                                                                                   TOTALS
14,504,985.00
  HR DEPT
VEHICLE LISTING Sorted by Department
           LOC
          CLS
                                                                                          K
                                                                                          0
08:37:29
                                                                                          0
                                                                                          Z
06/03/10
```

Appendix G

Vulnerability Assessment Chart

Participating Jurisdictions' Probability, Severity, and Vulnerability Overview

Probability = P High = H**

Severity = S Medium/Moderate = M**

Vulnerability = V Low = L**

** Definitions of ratings for Probability, Severity, and Vulnerability can be found at the beginning of Section 3

| | | | | | | | | | | | | | | | | | | Haz | arc | | | | | | | | | | | | | | | | | |
|------------------------------------|---|-------------|---|---|---------|---|---|------------|---|---|--------------|---|---|-------|---|---|-----------|-----|---------------|------------------------------|---|---|---------------|---|---|--------------------------|---|---|---------|---|---|----------|---|---|-----------|---|
| | | Dam Failure | | | Drought | | | Earthquake | | | Extreme Heat | | | Flood | | | Hailstorm | | 1 - 1 - 5 - 1 | Land Subsidence/ Sinkhole | | | Levee Failure | | | Severe Winter Weather | | | Tornado | | | Wildfire | | | Windstorm | |
| Participating Jurisdiction | Р | s | ٧ | Р | s | ٧ | Р | S | ٧ | Р | s | ٧ | Р | s | ٧ | Р | S | ٧ | Р | S | ٧ | Р | s | ٧ | Р | s | ٧ | Р | s | ٧ | Р | s | ٧ | Р | S | ٧ |
| Planning Area | L | M | M | M | M | M | M | M | M | M | M | M | Н | Н | Н | Н | М-Н | Н | L | L | L | M | M | M | M | M | M | Н | Н | Н | M | M | M | Н | М-Н | Н |
| Cole County (unincorporated areas) | L | M | M | M | M | M | M | M | M | M | M | M | Н | Н | Н | Н | М-Н | Н | L | L | L | M | M | M | M | M | M | Н | Н | Н | M | M | M | Н | М-Н | Н |
| Jefferson City | L | M | M | L | L | L | M | M | M | M | M | M | Н | Н | Н | Н | М-Н | Н | | | | M | M | M | M | M | M | Н | Н | Н | M | M | M | Н | М-Н | Н |
| Lohman | | | | L | L | L | M | M | M | M | M | M | Н | Н | Н | Н | М-Н | Н | | | | | | | M | M | M | Н | Н | Н | L | L | M | Н | М-Н | Н |
| Russellville | | | | L | L | L | M | M | M | M | M | M | L | L | L | Н | М-Н | Н | | | | | | | M | M | M | Н | Н | Н | L | L | M | Н | М-Н | Н |
| St. Martins | | | | L | L | L | M | M | M | M | M | M | Н | Н | Н | Н | М-Н | Н | | | | | | | M | M | M | Н | Н | Н | M | M | M | Н | М-Н | Н |
| St. Thomas | | | | L | L | L | M | M | M | M | M | M | L | L | L | Н | М-Н | Н | | | | | | | M | M | M | Н | Н | Н | M | M | M | Н | М-Н | Н |
| Taos | L | M | M | L | L | L | M | M | M | M | M | M | Н | Н | Н | Н | М-Н | Н | | | | | | | M | M | M | Н | Н | Н | L | L | M | Н | М-Н | Н |
| Wardsville | L | M | M | L | L | L | M | M | M | M | M | M | Н | Н | Н | Н | М-Н | Н | | | | | | | M | M | M | Н | Н | Н | M | M | M | Н | М-Н | Н |
| Cole County R-V School District | | | | L | L | L | M | M | M | M | M | M | L | L | L | Н | М-Н | Н | | | | | | | M | M | M | Н | Н | Н | M | M | M | Н | М-Н | Н |
| Jefferson City School District | | | | L | L | L | M | M | M | M | M | M | L | L | L | Н | М-Н | Н | | | | | | | M | M | M | Н | Н | Н | L | L | M | Н | М-Н | Н |
| Lincoln University | | | | L | L | L | M | M | M | M | M | M | L | L | L | Н | М-Н | Η | | | | | | | M | M | M | Н | Н | Н | M | M | M | Н | М-Н | Н |

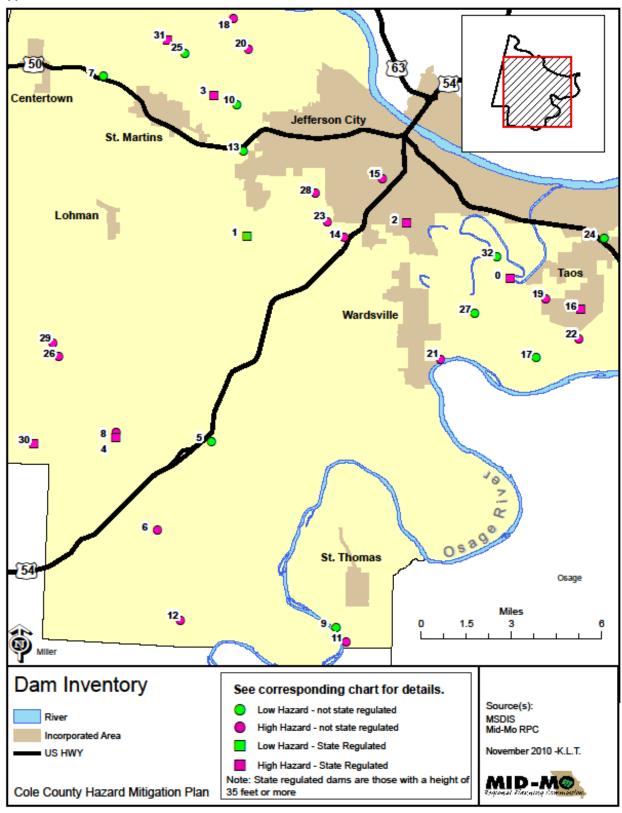
NOTE: Grayed out box means not applicable

Appendix H

Dam Inventory

Regulated and Unregulated

Appendix <



| Apper | ndix < | ED Colo | Count | y Domo | | | |
|-------|---------------------------|---------------|--------------|------------------------------|-----------------------------|------------------|----------------|
| Map | Name | Year Built | Ht (feet) | Reservoir Area (Acres) | Drainage Area (Acres) | Federal Class | State Class |
| 0 | YOUNG DAM | | 64 | 25.5 | 136.5 | Н | 2 |
| 1 | QUAIL VALLEY ESTATES DAM | 1981 | 44 | 37.7 | 280 | L | 3 |
| 2 | HOUGH PARK DAM | 1965 | 47 | 11 | 90 | Н | 1 |
| 3 | BINDER LAKE DAM | 1966 | 43 | 138 | 3968 | Н | 1 |
| 8 | LAKE CARMEL DAM | 1972 | 37 | 43 | 270 | Н | 2 |
| 16 | TWEHOUS LAKE DAM | 1973 | 48 | 41 | 280 | Н | 1 |
| 30 | DALTON DAM | 1989 | 46 | 41 | 278 | Н | 2 |
| 31 | DALE KLOSTERMAN LAKE DAM | 1994 | 39 | 15 | 76 | Н | 1 |
| | | | | | | | |
| | UNREGULA ⁻ | TED Co | le Cour | nty Dams | | | |
| 4 | STARR LAKE DAM | 1972 | 30 | 3 | 32 | Н | 2 |
| 5 | MONONAME 848 | 1973 | 20 | 5 | 38 | L | 3 |
| 6 | MAR-KAY LAKE DAM | 1970 | 20 | 8 | 110 | Н | 2 |
| 7 | ANDERSON LAKE DAM | 1972 | 25 | 9 | 100 | L | 3 |
| 9 | CLA-LOR LAKE DAM | 1800 | 25 | 10 | 180 | L | 3 |
| 10 | WOODWARD LAKE DAM | 1966 | 27 | 7 | 170 | L | 3 |
| 11 | TURPIN LAKE DAM | 1964 | 28 | 2 | 95 | Н | 2 |
| 12 | HENLEY LAKE DAM | 1909 | 28 | 7 | 200 | Н | 1 |
| 13 | LAKE CLARADEAN | 1959 | 17 | 10 | 145 | L | 3 |
| 14 | RENNS LAKE DAM | 1950 | 30 | 7 | 450 | Н | 2 |
| 15 | MCKAY PARK LAKE DAM | 1949 | 25 | 12 | 100 | Н | 1 |
| 17 | TED'S LAKE DAM | 1957 | 30 | 17 | 390 | L | 3 |
| 18 | CHURCH FARM LAKE DAM | 1957 | 29 | 5 | 70 | Н | 2 |
| 19 | DOVE LAKE DAM | 1969 | 31 | 20 | 50 | Н | 1 |
| 20 | LUBKER DAM | 1972 | 29 | 3 | 100 | Н | 2 |
| 21 | GRAESSLE-ROCKERS LAKE DAM | 1967 | 31 | 15 | 290 | Н | 2 |
| 22 | DEER VALLEY LAKE DAM | 1969 | 31 | 9 | 110 | Н | 2 |
| 23 | LAKEWOOD DAM | 1960 | 26 | 4 | 110 | Н | 2 |
| 24 | LAKE FOREST DAM | 1977 | 34 | 4 | 40 | L | 3 |
| 25 | RENN'S LAKE DAM-T45N | 1958 | 25 | 6 | 80 | L | 3 |
| 26 | WINEGAR LAKE DAM | 1978 | 28 | 10 | 160 | Н | 2 |
| 27 | VANLOO LAKE DAM | 1971 | 25 | 11 | 285 | L | 3 |
| 28 | SHADOW LAKE DAM | 1968 | 25 | 5 | 60 | Н | 2 |
| 29 | SPRING ROCK LAKE DAM | 1975 | 24 | 6 | 60 | Н | 2 |
| 32 | HOFFMAN | 1996 | 25 | 6 | 0 | L | |

Appendix I

Planning Area Flood Buyouts

Stemming the Tide of Flood Losses



Stories of Success from The History of Missouri's Flood Mitigation Program







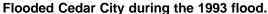




Missouri State Emergency Management Agency









Cedar City after the Buyout.

Cedar City

edar City is located just across the Missouri River, immediately north of Jefferson City. Most Cedar City residents believed that the flood of 1993 was the largest flood that had ever impacted their town, and that the flood in 1995 was only a little less severe. In both 1993 and 1995, water rose in Cedar City to between 25 and 30 feet deep, which classified both occurrences as "100 year floods."1 Before the 1993 flood, Cedar City was home to about 400 people in 115 houses and a number of businesses. Besides three convenience stores and two gas stations, an antique store, a mechanic's shop, businesses associated with the small Jefferson City Memorial Airport, Roettgen Auto Repair, Capital Steel, and Lauf Equipment formed the economic base of the town. The largest employer in Cedar City was ABB Transformer and Distribution Company that employed over 700 workers who manufactured electrical transformers for small businesses and homes.2

In contrast to the calculated average fair market value of the homes in Cedar City—\$15,669.00,3 residents felt a deep attachment to their

community. They reported the kind of town where everyone knew everybody else, where front doors were habitually left unlocked, children played in the streets, and people spent pleasant summer evenings visiting from their front porches. It was the kind of place, where long-time resident, Linda Nichols, remembers children enjoying simple pleasures like riding bicycles without concern for cars, trick or treating door to door on Halloween, and climbing apple trees.4

Yet, despite these bucolic memories, Cedar City was an area that had repeatedly suffered from floods. The postmistress of Cedar City, June Sundermeyer, remembers that before 1993, the town had flooded in 1942, 1943, 1944, 1947, 1951, 1973, 1983, 1986, and 1990. By 1993, Ms. Sundermeyer was ready to move. She was one of 98 homeowners, along with the membership of both the Methodist and the Baptist Churches who decided to take the buyout money to move to higher ground.5

In January, 1994, the City Manager's office in Jefferson City informed property owners in Cedar City that federal and state money was available to buy out property that had been severely damaged by the flood, and that the proposed prices would be assigned on the pre-flood value of the home. If residents were interested, the letter invited them to ask for an application. The response was immediate. The city also hired a professional appraisal service to establish the value of the homes—an appraisal for which the city paid, and also provided an appeal process if the homeowner disagreed. This price, minus any deductions of earlier financial payments from FEMA to the homeowner for emergency housing and structural repairs, plus a moving allowance, was the final sum offered to the homeowner. In return for this money, the homeowner turned the property over to Jefferson City, of which Cedar City was a suburb, and agreed that once the house is cleared from the land, that the area will be used only for "uses compatible with open space, recreational, or wetlands management."6

Only a few Cedar City residents had the foresight to buy flood insurance from the National Flood Insurance Program before the flood.

One senior citizen had conscientiously paid her premiums for years and had also maintained and created an "extremely well maintained property." The buyout program acknowledged her efforts, by offering pre-flood fair market value, which, with the insurance payoff, allowed her to move to a desirable property out of the flood-plain. The officials at SEMA were generally willing to adapt the buyout program to fairly compensate citizens who had accepted responsibility for living on land that was vulnerable to flood waters.

Cedar City was a kind of testing ground for the buyout program,

because Jefferson City was the first municipality to offer the program to its citizens. Cooperatively, Jefferson City and SEMA worked out some "kinks." For instance, officials discovered that county assessors in Cedar City had seriously underestimated the value of property in the years before the flood, and the "fair

pre-flood market price of the property" was about 15% undervalued. SEMA, therefore allowed a 15% mark-up in the offering price to offset this difficulty.7 This kind of flexibility and fairness has been typical of the Flood Buyout Program generally. SEMA officials realized that to make the program a success, it had to be sensitive to local conditions.

By March 1, 1994, the first buyout had been approved, followed by the first payment to an owner on May 11.8 Most of Cedar City's houses were empty of people by May, 1995, when the water rose again. The effectiveness

of the program was immediately apparent when the floods came this second time. In 1993, 473 citizens of Cedar City had applied for individual assistance during the flood. The total cost to the taxpayer for disaster housing, Individual Family Grants, and Small Business Administration (SBA) loans was \$1,435,149. When the floods came again in 1995, most residents were gone, and consequently the number of people applying for emergency aid was less. In 1995, only 53 people applied for individual assistance which totaled \$176.902. The two floods covered almost the same areas in Cedar City, but because of the buyout program, the taxpayers of Missouri



Pavilion adjacent to the Katy Trail State Park in Cedar City.

were able to save \$1,258,247. After 1995, most of the remaining citizens of Cedar City decided that they too would take advantage of the buyout offer. Today, only six people live in Cedar City, and the emergency cost of helping them has been greatly reduced.9

What has happened to the land where housed once stood? Jefferson City has built a picnic pavilion on part of it along with an extension of the KATY Bike Trail that connects that trans-Missouri bicycle path with the Missouri River. Jefferson City's Park and Recreation Department has rented garden plots

to individuals for a token rent of \$15.00 a year.10 A few previous landowners worked out special arrangements with the Jefferson City Parks and Recreation Department, whereby they were allowed lifetime gardening rights on their old garden sites.11 The most original use of the land, however, has to be on the six acres rented to Harry Thompson and his son Ben. Ben was the president of his local Future Farmers of America (FFA) chapter, and the group needed a fundraising project. The Thompsons teamed up with the organizers of the Jefferson City River Rendezvous Festival, in October 1998, to produce a truly amazing attraction. First, they

planted corn on six acres of land and then cut out of the 12 foot high field of corn a gigantic 500 by 350 foot crop art representation of the Missouri State Capitol Building. This giant image was only visible from the air, but visitors to the Rendezvous Festival

could enjoy the "sculpture" in yet another way. At ground level, the image, cut from the live corn, was actually an intersecting maze of paths 7-12 feet wide. Visitors to the Rendezvous Festival could pay a fee and try to negotiate their way through the maze. Unfortunately, four days before the festival, a flash flood on the Missouri River threatened to drown the whole area in water, and the festival had to be moved to higher ground. It was not a total loss, for the threatened flood did not overtop the levee system, and the resourceful Thompsons were able to harvest and sell the corn in the field. Adapting to

the sudden change in location they were also able to build a smaller maze out of hay bails at the new Rendezvous site, which still made money for the FFA chapter.12 Cooperation, innovation, community spirit, feelings of security instead of dread, relief to taxpayers—these are a few of the results that have made the Flood Buyout Program such a success in the Cedar City/Jefferson City area of Missouri.

Due to low elevation and close proximity to the Missouri River, Cedar City was subjected to catastrophic flooding.



Closed Gone Fishing.

Even when facing certain disaster during the floods, Missourians exhibited a strong spirit and were able to maintain an excellent sense of humor.

Today Cedar City is mostly vacant lots. The ABB transformer plant is still there as are most of the businesses that were there before the flood, including the airport, but every empty lot marks the site of a home that will never again need to be defended from the rising waters of the Missouri.



| Community Name CID# 290108 | Prop Locatr | Insu | Community Response Current Property Status | Address Line 1 | Address Line 2 | City | Zip | Insureds Name | Last Claimant | Occupancy | Zone | Losses | SRL | As of Date |
|-------------------------------|----------------|------|--|--|--------------------------------|----------------|-----------|--------------------------------|---------------------------------|----------------|-------|--------|-----|------------|
| JEFFERSON CITY | 0042380 | NO | 810 Hibernia Bought Out - FEMA & Airport Grant Money Used | | RT 1 | HOLTS SUMMIT | 650430000 | | WARREN BLOOMER | 2-4 FAMIL | Y A11 | 4 | | 07/31/2007 |
| JEFFERSON CITY | 0033586 | NO | 1006 Teal Bought Out - CDBG & FEMA Money Used | | LOT 10 BLK 4 | CEDAR CITY | 650220000 | | DAVID PEARON | SINGLE FMLY | A11 | 2 | | 07/31/2007 |
| JEFFERSON CITY | 0015741 | NO | Address & Claimant Name Discrepancy - Status Not Verified | SEC 16 T S 44 RANGE | 15TH ST | CEDAR CY | 650229999 | | ASSUMED CONDOMINIUN BUILDING | ASSMD CONDO | A11 | 2 | | 07/31/2007 |
| JEFFERSON CITY | 0050105 | NO | Address Discrepancy - Status Not Verified | 5 | 1450 ASHBY RD | STLOUIS | 63132 | | BILD MART INC | NON RESIDNT | A20 | 2 | | 07/31/2007 |
| JEFFERSON CITY | 0033380 | NO | 1200 5th Bought Out - FEMA Money Used | | 105 *PO BOX* 5TH WALNUT | CEDAR CITY | 650229999 | | EVELYN ZUEGIN | SINGLE FMLY | A11 | 2 | | 07/31/2007 |
| JEFFERSON CITY | 0056282 | NO | 517 Aviation Dr - Still Occupied as Restaurant - Different Tenant Now - Scott Raithel | | AIRPORT BLDG | JEFFERSON CY | 651019999 | | RICHARD TREMAIN | NON RESIDNT | A09 | 2 | | 07/31/2007 |
| JEFFERSON CITY | 0080019 | YES | Presently Occupied - No record of Mitigation Action - Structure Unchanged | GENERAL DELIVERY | AIRPORT MAINT BLDG | JEFFERSON CTY | 651019999 | CITY OF JEFFERSON | ONCITY OF JEFFERS | NON RESIDNT | A09 | 2 | | 07/31/2007 |
| JEFFERSON CITY | 0057497 | NO | Wehmeyer Road Parcel Bought Out - CDBG Money Used? | SEC 10 TWN 44 RGE 1 | N OF AIRPORT SO OF 1 HWY 94 | CEDAR CITY | 650220133 | | STEVE BURNS | SINGLE FMLY | A09 | 2 | | 07/31/2007 |
| JEFFERSON CITY | 0054382 | NO | Presently Occupied - Terminal Building - Callaway County as Opposed to Gallaway | | 500 AIR PORT DR | GALLAWAY | 651010000 | | CITY OF JEFFERS | NON RESIDNT | A09 | 2 | | 07/31/2007 |
| JEFFERSON CITY | 0050801 | NO | Address & Claimant Name Discrepancy - Status Not Verified | 113-15 CEDAR | ST | JEFFERSON CITY | | | CENTRAL DAIRY C | NON RESIDNT | A20 | 5 | | 07/31/2007 |
| JEFFERSON CITY | 0057395 | NO | Bought Out - CDBG, FEMA or Airport Grant Money Used | | 700 CEDARVALE RD | JEFFERSON CY | 651010000 | | RAY MOSS | SINGLE FMLY | A09 | 2 | | 07/31/2007 |
| JEFFERSON CITY | 0080021 | NO | Bought Out - CDBG, FEMA or Airport Grant Money Used | | 708 CEDARVILLE RD | JEFFERSON CITY | 65101 | | IRENE H VALIE | SINGLE FMLY | A09 | 2 | | 07/31/2007 |
| JEFFERSON CITY | 0077811 | NO | Bought Out - CDBG, FEMA or Airport Grant Money Used | | 710 CEDARVALE RD | CEDAR CITY | 650220000 | | BONNIE CARDWELL | SINGLE FMLY | A09 | 2 | (| 07/31/2007 |
| JEFFERSON CITY | 0038254 | NO | 715 - 717 Cedarvale Bought Out - CDBG & FEMA Money Used | | 8 CEDARVALE RD | CEDAR CITY | 650220000 | | DONNA MOBLEY | SINGLE FMLY | A11 | 2 | c | 07/31/2007 |
| JEFFERSON CITY | 0070857 | SDF | Not in Jursdiction - Located in CID# 290107 | SECTION 31, TWP 44 RANGE 10W | COLE COUNTY | JEFFERSON CITY | 651010000 | JOSEPH A FORCK | JOSETTA FORCK, JOSEPH, | SINGLE FMLY | С | 3 | PC | 7/31/2007 |
| JEFFERSON CITY | 0056629 | NO | Presently Occupied | 411 W DUNKLIN | 411 W DUNKLIN | JEFFERSON CY | 651011644 | | BEVERLY SCHEULEN | 2-4 FAMILY | A14 | 2 | c | 7/31/2007 |
| JEFFERSON CITY | 0055996 | | Not in Jursdiction - Located in CID# 290107 | 9836 ENGINEERS RD MARRIWEATHER DEV CORP LOT 71 | 9836 ENGINEERS RD | JEFFERSON CITY | 651018884 | DANIEL J BUSCHJOST | DANIEL BUSCHJOST | SINGLE FMLY | А | 2 | c | 7/31/2007 |
| JEFFERSON CITY | 0077936 | | DUPLICATE TO 57114 - Bought Out - CDBG, FEMA or Airport Grant Money Used | | 1018 FOURTH ST | CEDAR CITY | 650220000 | | IES WAREHOUSENEW CAPITAL CIT | NON RESIDNT | A09 | 2 | 0 | 7/31/2007 |
| JEFFERSON CITY | 0056827 | | Presently Occupied - No record of Mitigation Action - Structure Unchanged | | 916 GENEVA ST | JEFFERSON CY | 651090000 | RANDALL T & LINDA D FISCHER | DA D FISCHERRANDALL T & LIN | SINGLE FMLY | A09 | 2 | 0 | 7/31/2007 |
| JEFFERSON CITY | 0080022 | - 1 | DUPLICATE TO 35915 - 916 Hibernia - Presently Occupied | AIRPORT PAVITT BLDG | GENERAL DELIVERY | JEFFERSON CTY | 651019999 | CITY OF JEFFERSON | ONCITY OF JEFFERS | NON RESIDNT | A09 | 2 | | 7/31/2007 |
| JEFFERSON CITY | 0033381 | | 1021 4th Street Bought Out - CDBG, FEMA or Airport Grant Money Used | | 210 LOCUST ST | CEDAR CY | 650229999 | | BAPTIST CHR OF | NON RESIDNT | A11 | 3 | 0 | 7/31/2007 |

| Community Name CID# 290108 | Prop Locatr | Insu | Community Response Current Property Status | Address Line 1 | Address Line 2 | City | Zip | Insureds Name | Last Claimant | Occupancy | Zone | Losses | SRL | As of Date |
|-------------------------------|----------------|------|---|---|-----------------------------------|----------------|-----------|-------------------|---------------------------------|----------------|------|--------|-------|------------|
| JEFFERSON CITY | 0015742 | NO | 1008 Sandstone Bought Out CDBG, FEMA or Airport Grant Money Used | | 408 LOCUST ST | CEDAR CITY | 650229999 | | PERRY HICKS | SINGLE FMLY | A11 | 2 | | 07/31/200 |
| JEFFERSON CITY | 0006083 | NO | Not in Jursdiction - Located in CID# 290107 | HWY 50 2 MI W OSAGE RIV RR 3 | TO LISLETWN RD 3RD HSE FRM END | JEFFERSON CITY | 65101 | | PERRY DALE REDMON SE | SINGLE FMLY | | 4 | | 07/31/200 |
| JEFFERSON CITY | 0053189 | SDF | Address Discrepancy - 1516 E McCarty Owned by Louis Vetter & Presently Occupied | | 1518 E MCCARTY ST | JEFFERSON CITY | 651014350 | LOUIS VETTER | LOUIS VETTER | NON RESIDNT | A | 4 | PN | 07/31/200 |
| JEFFERSON CITY | 0074266 | YES | Presently Occupied - No record of Mitigation Action - Structure Unchanged | | 319 W MILLER STREET | JEFFERSON CITY | 651010000 | HOTEL DEVILLE LC | R HOTEL CORPTHE 319 W MILLE | NON RESIDNT | A14 | 2 | | 07/31/2007 |
| JEFFERSON CITY | 0008685 | NO | 1101 Teal Bought Out - CDBG & FEMA Money Used | | 501 OLIVE | CEDAR CITY | 65022 | | CHRIS P GERBER | SINGLE FMLY | A09 | 2 | | 07/31/2007 |
| JEFFERSON CITY | 0077806 | NO | Presently Occupied - No record of Mitigation Action - Structure Unchanged | | 6TH OLIVE | CEDAR CY | 650220000 | | DALLAS HUMPHREY | SINGLE FMLY | A11 | 2 | PU | 07/31/2007 |
| JEFFERSON CITY | 0035915 | NO | DUPLICATE TO 80022 - Same as 916 Hibernia Entry - Still Occupied | | OLD HWY 54 N AT AIRPORT RD | CEDAR CY | 65022 | | PAVITT,DAVID D & BETTY J | NON RESIDNT | A11 | 2 | | 07/31/2007 |
| JEFFERSON CITY | 0052496 | NO | Not in Jursdiction - Located in CID# 290107 | | 4419 RIVERFRONT DR | JEFFERSON CY | 651019803 | | HUGO BACKES | SINGLE FMLY | С | 2 | PU | 07/31/2007 |
| JEFFERSON CITY | 0070878 | NO | Insufficient Information to Locate - Dittmen Assumed to be in Different Community | | 7930 RIVERVIEW DR | DITTMEN | 630232306 | | NAHLIK, TOM | SINGLE FMLY | A09 | 2 | П | 07/31/2007 |
| JEFFERSON CITY | 0006635 | NO | 206 (1020?) Railroad Bought Out - CDBG & FEMA Money Used | | 206 RAILROAD AVE | CEDAR CITY | 65022 | | ORNA E MICKELIS | SINGLE FMLY | AE | 3 | П | 07/31/2007 |
| JEFFERSON CITY | 0086025 | SDF | Not in Jursdiction - Located in CID# 290107 | | 9912 STEAMBOAT RD | JEFFERSON CITY | 651018843 | DEBBIE GREGORY | DEBBIE GREGORY | SINGLE FMLY | Ang | 13 | | 07/31/2007 |
| JEFFERSON CITY | 0056291 | NO | 501 & 505 Airport Rd - Jefferson City Flying Service - Presently Occupied | E HW 54 ON AIRPORT RD | SMALL BLUE HANGLER | | 651010000 | | ASSUMED CONDOMINIUM BUILDING | ASSMD CONDO | A09 | 3 | | 07/31/2007 |
| JEFFERSON CITY | 0052005 | NO | Insufficient Information to Locate | | SEC 26 TWP 44 RGE 12 | COLE CO | 65101 | | STOKES ELEC CO INC | SINGLE FMLY | Δ | 3 | | 07/31/2007 |
| EFFERSON CITY | 0001208 | NO | Not in Jursdiction - Located in CID# 290107 | LOT 5 OTT'S OSAGE ACRES | PT SEC 33, T 44, R10 COLE CO | JEFFERSON CITY | | | HEMMELL, VERNON | SINGLE | A09 | 3 | | 07/31/2007 |
| EFFERSON CITY | 0052019 | NO | Not in Jursdiction - Located in CID# 290237 | COMMUNITY NUMBER 29 108 C LOT 7 SEC 24 TWP 44N R10W | ZONE A 09 | JEFFERSON | 651090000 | | CLARENCE HIGGINS | SINGLE | A09 | | | 07/31/2007 |
| EFFERSON CITY | 0057223 | NO | Presently Occupied - No record of Mitigation Action - Structure Unchanged | | ICE AREAN BLDG-700 KANSAS | JEFFERSON CY | 651090000 | | CITY OF JEFFERS | NON RESIDNT | A14 | 2 | | 07/31/2007 |
| EFFERSON CITY | 0110529 | SDF | 507 Airpart Rd | AIRPORT RD | JEFFERSON CY MEMORIAL AIRPORT | JEFFERSON CITY | 651020000 | CENTRAL BANCOMPAN | ANYCENTRAL BANCOMP | NON RESIDNT | Anto | 2 | 700 | 77:31/2007 |
| EFFERSON CITY | 0052549 | | 501 & 505 Airport Rd - Jefferson City Flying Service - Presently Occupied | | JEFFERSON CITY MEMORIAL AIRPT | JEFFERSON | 651010000 | | ON CITY F SVCTHE NEW JEFFERS | NON RESIDNT | A00 | 4 | VA.11 | |
| EFFERSON CITY | 0072348 | | Insufficient Information to Locate | | 2104 2ND ST | JEFFERSON CITY | | | KEN BAYSINGER | SINGLE FMLY | A09 | 4 | | 7/31/2007 |
| EFFERSON CITY | | | Presently Occupied - No record of Mitigation Action - Structure Unchanged | 317 3RD ST | | CEDAR CY | 650229999 | | | SINGLE FMLY | В | 3 | | 7/31/2007 |
| EFFERSON CITY | | | DUPLICATE TO 77936 - Bought Out - CDBG, FEMA or Airport Grant Money Used | 1018 4TH | ST | | | | | NON | A11 | 2 | | 7/31/2007 |
| | 0038861 | | 1107 4th Street Bought Out - FEMA Money Used | | 312 4TH ST | JEFFERSON CY | 999999999 | | RAY MOSS INC | RESIDNT | A09 | 2 | 0 | 7/31/2007 |

| Community Name CID# 290108 | | | Community Response Current Property Status | Address Li | ne 1 | Address Line 2 | City | Zip | Insureds Name | Last Claimant | Occupancy | Zone | Losses | SRL | As of Date |
|-------------------------------|---------|----|---|------------|------|----------------|------------|-----------|---------------|-----------------|----------------|------|--------|-----|------------|
| JEFFERSON CITY | 0063649 | NO | 1102 4th StreetBought Out - CDBG & FEMA Money Used | 315 4TH S | т | | CEDAR CITY | 650229999 | | WILLIAM REED | SINGLE FMLY | A09 | 2 | | 07/31/2007 |
| JEFFERSON CITY | 0063650 | NO | 1101 4th Street Bought Out - FEMA Money Used | | | 318 4TH STREET | CEDAR CITY | 65022 | | CLAUDIA L BOYCE | 2-4 FAMILY | AE | 2 | | 07/31/2007 |
| JEFFERSON CITY | 0033569 | NO | 1105 Railroad Street Bought Out - FEMA Money Used | 1105 | 5TH | ST | CEDAR | 650229999 |) | DINAH MICKELIS | SINGLE FMLY | A11 | 3 | | 07/31/200 |
| JEFFERSON CITY | 0033571 | | Bought Out - COBG, FEMA or Airport Grant Money Used | 204 | 6TH | ST | CEDAR CY | 650229999 | | SHARON LANE | SINGLE FMLY | A11 | 3 | | 07/31/200 |
| JEFFERSON CITY | 0033390 | | 316 (1103?) 6th Street Bought Out - FEMA Money Used | 316 | 6TH | ST | CEDAR CY | 650229999 | | JASPER SIMMONS | SINGLE FMLY | A11 | 3 | | 07/31/2007 |

Appendix J

Levee Consolidation Resolution for Cedar City and Capital View Drainage Districts 2009

RESOLUTION

Sponsored by Councilman Penfold

A RESOLUTION OF THE CITY OF JEFFERSON APPOINTING AIRPORT DIVISION DIRECTOR RON CRAFT AS LIAISON AND REPRESENTATIVE TO THE CAPITAL VIEW DRAINAGE DISTRICT

WHEREAS, The City of Jefferson previously participated in the Cedar City Drainage District in which Airport Division Director Ron Craft served as the City's Liaison and Representative to the District; and

WHEREAS, the Cedar City Drainage District has recently consolidated with another Drainage District to form the Capital View Drainage District, and

WHEREAS, no single person may bind the City to a financial obligation; and

WHEREAS, a new City liaison needs to be appointed.

NOW, THEREFORE BE IT RESOLVED by the Council of the City of Jefferson, Missouri, that Airport Division Director Ron Craft shall act as liaison and Representative to the Capital View Drainage District and is hereby authorized to participate in its operations, including serving on its board of supervisors, provided no compensation shall be accepted by said liaison for service with the Capital View Drainage District, and provided that he may not vote to impose or increase a tax levy or assessment against City property without the approval of the City Council.

Adopted this 7th day of December, 2009

ATTEST:

Approved as to form:

Counselor



Memorandum

320 East McCarty Street • Jefferson City, Missouri 65101 • P: 573.634.6410 • F: 573.634.6457 • www.jeffcitymo.org/cd

TO:

Mayor Landwehr and City Council Steve Rasmussen, City Administrator

lanice McMillan, Deputy Director/Planning & Transportation Services

DATE:

December 1, 2009

SUBJECT: Capital View Drainage District

This memo provides a brief history of the Capital View Drainage District.

The former Cedar City Drainage District (CCDD) was originally formed in 1917 for a period of 25 years, and renewed for a 50 year period in 1942. It was allowed to lapse out of existence in December 1992 and had to be reorganized in 1993. The former Capital View Drainage District (CVDD) was also organized in 1993. Both districts were formed specifically to maintain the two agricultural levees in the Cedar City/Jefferson City area of the Missouri River floodplain and to protect the property within them from the effects of Missouri River flooding.

After the most recent flood scare (2008) the president of the former CVDD (Dave Boessen) approached the president of the former CCDD (Ron Craft) about the idea of merging the two districts together. The thinking was that if the two districts merged it would eliminate the duplication of services and responsibilities, and pool revenue and resources of the two districts to better maintain the levees. Also, there were several landowners who owned separate properties in each district, and were being taxed by one district but not the other.

If a single district could be formed that had taxing authority, it would increase the revenue obtained and permit the new district to better maintain the existing levees. The new district would also be able to annex several properties in the former Cedar City area that were not members of either of the former districts (including MFA, two trucking companies, Midwest Pre-Mix, and property owned by the DeLong family).

After speaking with the landowners within each district it was determined that there was 100% support from the landowners for the idea of consolidating the two districts. The two presidents approached attorney Joe Holt about representing the districts in the merger process. Mr. Holt had served as legal counsel for both districts when they were reorganized in 1993 (as well as all of the other existing districts in the vicinity). Mr. Holt informed the landowners that Missouri law prescribed the only way that the two districts could merge was for one to voluntarily dissolve and the other to annex the territory. It was decided that since the CCDD had the

"building a better community"

better organized administrative structure and a stronger source of revenue, that the CVDD would dissolve and the CCDD would annex that territory.

A vote of the landowners in the CVDD was held on July 16, 2009 for the purpose of voting on the proposed dissolution of the CVDD and annexation by the CCDD. The vote was 100% in favor of proceeding on this course. A meeting of the landowners in the CCDD was held immediately following the above mentioned meeting for the purpose of annexing the land formerly within the CVDD. Again, the vote was 100% in favor of annexation.

On September 21, 2009 the 13th Judicial Circuit Court in Fulton/Callaway County accepted the petition for dissolution of the CVDD and the petition to annex the property into the CCDD. At the same time the name of the newly created district was established as the Capital View Drainage District. It had been previously decided by the landowners (also agreed upon by a 100% vote) that the new district adopt that name as it was more appropriate since Cedar City was no longer in existence, and to prevent confusion and maintain continuity.

The former CCDD consisted of 19 landowners with 1,480.79 acres (the City of Jefferson owns 759 acres, or 51% of this area). The former CVDD included 9 landowners and 1,100 acres.

A count of the acreage and landowners of the new CVDD has not yet been accomplished, and is a future task for the reorganized district. The new CVDD will contain all of the acreage and landowners of the two prior districts, however, there was some overlap between the two previous districts; and some land was not included in either prior district which the new CVDD may annex. Another future task for the CVDD will be to determine the level of assessment.

The new CVDD is governed by a 5-member Board of Supervisors consisting a City representative, one Business representative, and three members representing Agricultural interests.

Note: The difference between a "drainage district" and a "levee district" is that a drainage district has authority to assess taxes on landowners for maintenance of the levee, while a levee district does not.

"building a better community"

Appendix K

Priority Scale Development

| Range of Ratings - STAPLEE and Benefit/Cost | 3=D | ef Y | ES | | 1=F | Prob | NO | | | | | | |
|--|-----|------|------|---|-----|-------|----|------------------|---------|----------|-----------|----------|----------|
| Kange of Ratings - STAFELE and Benefit/Cost | 2=N | layb | e YE | S | 0=0 | Def N | 0 | | | • | | | |
| MITIGATION ACTIONS | s | Т | Α | Р | L | E | Е | STAPLEE Total | Benefit | Cost | B/C Total | TOTAL | PRIORITY |
| Half prob NO, half maybe YES on STAPLEE, Low Benefit, High cost | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 10 | 2 | -5 | -3 | 7 | L |
| Half prob NO, half maybe YES on STAPLEE, Mod Benefit, Mod cost | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 10 | 5 | -3 | 2 | 12 | L |
| Half prob NO, half maybe YES on STAPLEE, High Benefit, Little cost | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 10 | 8 | -1 | 7 | 17 | M |
| | | _ | _ | _ | _ | _ | _ | | _ | _ | | | _ |
| All maybe YES on STAPLEE, Low Benefit, High cost | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 14 | 2 | -5 | -3 | 11 | L |
| All maybe YES on STAPLEE, Moderate Benefit, Moderate cost | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 14 14 | 5 8 | -3 -1 | 2 | 16 21 | M H |
| All maybe YES on STAPLEE, High Benefit, Little cost | | | | | | | | 14 | 0 | -1 | / | 21 | п |
| Half maybe YES, half def YES on STAPLEE, Low Benefit, High cost | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 17 | 2 | -5 | -3 | 14 | M |
| Half maybe YES, half def YES on STAPLEE, Mod Benefit, Mod cost | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 17 | 5 | -3 | 2 | 19 | M |
| Half maybe YES, half def YES on STAPLEE, High Benefit, Little cost | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 17 | 8 | -1 | 7 | 24 | Н |
| | | | | | | | | | | | | | |
| All def YES on STAPLEE, Low Benefit, High cost | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 21 | 2 | -5 | -3 | 18 | M |
| All def YES on STAPLEE, Moderate Benefit, Moderate cost | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 21 | 5 | -3 | 2 | 23 | Н |
| All def YES on STAPLEE, High Benefit, Little cost | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 21 | 8 | -1 | 7 | 28 | Н |

Appendix L

Jurisdiction Specific Information for Centertown

| Center | town Profile |
|--|--|
| Classification | 4 th class city |
| Population (2000) | 257 |
| Median household income (1999) | \$39,750 |
| Median owner-occupied housing value (2000) | \$58,300 |
| Total housing units (2000) | 132 |
| Water service | Centertown |
| Electric service | AmerenUE |
| Ambulance service | Cole County Emergency Medical Services |
| Sewer service | Private |
| Fire service | Regional West Fire Protection District |
| Master plan | No |
| Emergency Operations Plan | Yes |
| Building regulations | Yes |
| Zoning regulations | Yes |
| Subdivision regulations | Yes |
| Storm water regulations | No |
| NFIP participation | No |
| Floodplain regulations | No |

The Village of Centertown has not adopted the County building codes but has expressed an interest in meeting with the County Public Works Department to discuss the issue.

Assessed Values

| Centertown | | | | | | | | | | | | |
|---|-------------|--------------|-----------|--|--|--|--|--|--|--|--|--|
| 2010 Assessed Values | | | | | | | | | | | | |
| Real Estate Valuation Personal Property Valuation | | | | | | | | | | | | |
| Residential | \$2,172,440 | Residential | \$451,960 | | | | | | | | | |
| Agricultural | \$10,830 | Agricultural | \$38,853 | | | | | | | | | |
| Commercial | \$259,700 | Commercial | \$64,382 | | | | | | | | | |
| Total \$2,442,970 Total \$555,195 | | | | | | | | | | | | |
| Source: Cole County Assessor's Office | | | | | | | | | | | | |

Flood Profile

The community of Centertown has a very small undeveloped area which lies within the 100-year flood plain. The area that lies within the boundary of Centertown is less than 2 acres, heavily forested, and void of infrastructure.

