

Section 1: Introduction

What is Natural Hazard Mitigation?

Natural hazard mitigation is defined as permanently reducing or alleviating the losses of life, property and injuries resulting from natural hazards through long and short-term strategies. Example strategies include policy changes, such as updated ordinances; projects, such as seismic retrofits to critical facilities; education and outreach to targeted audiences, such as Spanish speaking residents, or the elderly. Mitigation is the responsibility of individuals, private businesses and industries, state and local governments, and the federal government.

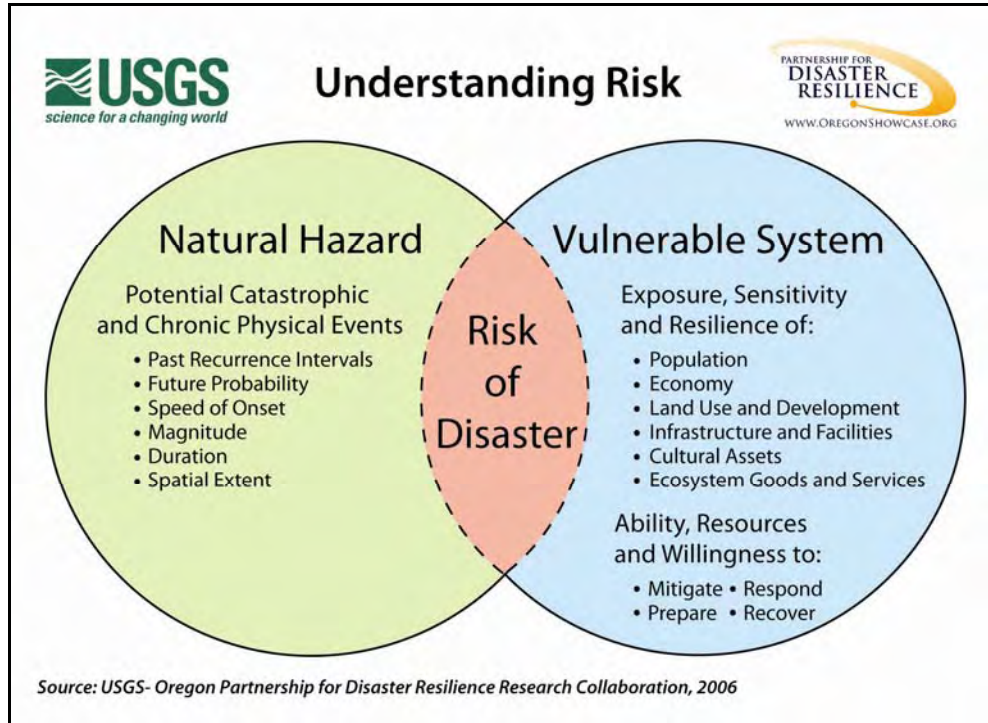
Engaging in mitigation activities provides jurisdictions with a number of benefits, including reduced loss of life, property, essential services, critical facilities and economic hardship; reduced short-term and long-term recovery and reconstruction costs; increased cooperation and communication within the community through the planning process; and increased potential for state and federal funding for recovery and reconstruction projects.

Why Develop a Mitigation Plan?

Marion County developed this multi-jurisdictional Natural Hazards Mitigation Plan in an effort to reduce future loss of life and damage to property resulting from natural hazards. This plan was developed with and for the following jurisdictions: Marion County and the cities of Aurora, Keizer, Silverton, and Woodburn. The cities of Aurora, Keizer, Silverton, and Woodburn are new jurisdictions not previously represented in Marion County's 2005 Natural Hazards Mitigation Plan. It is impossible to predict exactly when disasters will occur, or the extent to which they will affect the county. However, with careful planning and collaboration among public agencies, private sector organizations, and citizens within the community, it is possible to minimize the losses that can result from natural hazards.

Figure 1.1 below is utilized throughout the plan to illustrate the concepts of risk reduction.

Figure 1.1 Understanding Risk



A natural hazard mitigation plan can assist the community in understanding what puts the community at risk. By identifying and understanding the relationship between natural hazards, vulnerable systems, and existing capabilities, communities in Marion County become better equipped to identify and implement actions aimed at reducing the overall risk of hazards.

This plan focuses on the primary natural hazards that could affect Marion County, Oregon, which include drought, earthquake, flood, landslide, volcano, wildfire, wind storm and winter storm. This plan also addresses man made hazards such as dam failure. The dramatic increase in the costs associated with natural disasters over the past decades has fostered interest in identifying and implementing effective means of reducing vulnerability. A report submitted to Congress by the National Institute of Building Science’s Multi-hazard Mitigation Council (MMC) highlights that for every dollar spent on mitigation, society can expect an average savings of \$4.¹ This multi-jurisdictional Natural Hazards Mitigation Plan is intended to assist all participating jurisdictions in reducing its risk from natural hazards by identifying resources, information, and strategies for risk reduction.

¹ National Institute of Building Science’s Multi-hazard Mitigation Council. “Natural Hazard Mitigation Saves: An Independent Study to Assess the Future Savings from Mitigation Activities” 2005.

The plan is strategic and non-regulatory in nature, meaning that it does not necessarily set forth any new policy. It does, however, provide: (1) a foundation for coordination and collaboration among agencies and the public in the county; (2) identification and prioritization of future mitigation activities; and (3) aid in meeting federal planning requirements and qualifying for assistance programs. The mitigation plan works in conjunction with other county and city plans and programs including the Marion County Comprehensive Plan, Zoning Ordinance, Emergency Operations Plan, and Community Wildfire Protection Plan, as well as the State of Oregon Natural Hazards Mitigation Plan.

The plan provides a set of actions to prepare for and reduce the risks posed by natural hazards through education and outreach programs, the development of partnerships, and the implementation of preventative activities such as land use or watershed management programs. The actions described in the plan are intended to be implemented through existing plans and programs within the county and/or cities.

Policy Framework for Natural Hazards in Oregon

Planning for natural hazards is an integral element of Oregon's statewide land use planning program. All Oregon cities and counties have comprehensive plans and implementing ordinances that are required to comply with the statewide planning goals. The challenge faced by state and local governments is to keep this network of local plans coordinated in response to the changing conditions and needs of Oregon communities.

Statewide land use planning Goal 7: Areas Subject to Natural Hazards calls for local plans to include inventories, policies and ordinances to guide development in or away from hazard areas. Goal 7, along with other land use planning goals, has helped to reduce losses from natural hazards. Through risk identification and the recommendation of risk-reduction actions, this plan aligns with the goals of the jurisdiction's Comprehensive Plan, and helps each jurisdiction meet the requirements of statewide land use planning Goal 7.

The primary responsibility for the development and implementation of risk reduction strategies and policies lies with local jurisdictions. However, resources exist at the state and federal levels. Some of the key agencies include Oregon Emergency Management (OEM), Oregon Building Codes Division (BCD), Oregon Department of Forestry (ODF), Oregon Department of Geology and Mineral Industries (DOGAMI), and the Department of Land Conservation and Development (DLCD).

The Disaster Mitigation Act of 2000 (DMA 2000) is the latest federal legislation addressing mitigation planning. It reinforces the importance of mitigation planning and emphasizes planning for natural hazards before they occur. As such, this Act established the Pre-Disaster Mitigation

(PDM) grant program and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP). Section 322 of the Act specifically addresses mitigation planning at the state and local levels. State and local jurisdictions must have approved mitigation plans in place in order to qualify to receive post-disaster HMGP funds. Mitigation plans must demonstrate that their proposed mitigation measures are based on a sound planning process that accounts for the risk to the individual and their capabilities.

How was the Plan Developed?

2005 Planning Process

In 2004, Marion County contracted with the Mid-Willamette Valley Council of Governments to develop the Marion County Natural Hazards Mitigation Plan. The Marion County Emergency/Safety Manager and Emergency Management Deputy Director developed the mitigation plan's steering committee. Members of the steering committee are listed in Table 1.1 below:

Table 1.1 2005 Plan Development Steering Committee

Name	Organization
Fancey, Mark	Project Manager, MWVCOG
Ingram Moore, Judith	Project Manager, MWVCOG
Hales, Gary	Marion County Risk Management
Jackson, Warren	Marion County Building Division
McCracken, Sue	Marion County Public Information
Milliman, Lisa	Marion County Planning
Pearson, Burnie	Marion County GIS
Pech, Evelyn	Marion County Road Operations
Rowland, Krista	Marion County Emergency Management
Sasaki, Les	Marion County Planning
Stevenson, Roger	Salem Fire/Emergency Management
Thorburn, Matt	Marion County Public Works
Vanderzanden, John	Marion County Emergency Management
Williamson, Roger	American Red Cross

The steering committee met six times between September 2004 and March 2005 to develop the mitigation plan's risk assessment, goals, action items, and identify community stakeholders to be interviewed to gather additional data. Meetings were facilitated by the project managers from Mid-Willamette Valley Council of Governments.

Public Involvement

The project managers engaged the public in three ways to develop the plan. First, a steering committee comprised of individuals representing different divisions in Marion County and the American Red Cross was created to produce the plan. Second, the plan's project managers

conducted stakeholder interviews to target the specialized knowledge of individuals whose work may be affected by natural hazards and whose work deals with natural hazards on a regular basis. Finally, the project managers held a community open house to inform the public about natural hazards that occur in Marion County and to identify potential hazard mitigation strategies. Details about each method and meetings held are described in Appendix A, Public Process.

2009 Planning Process

In the fall of 2006, OPDR at the University of Oregon’s Community Service Center partnered with Oregon Emergency Management (OEM) to develop a Pre-Disaster Mitigation Planning Grant proposal to create natural hazards mitigation plan addenda for Oregon’s Mid/Southern Willamette Valley cities. FEMA awarded the region with a Pre-Disaster Mitigation planning grant, and planning efforts with the cities of Aurora, Keizer, Silverton, and Woodburn began in the winter of 2009. The Partnership facilitated and documented each of the cities’ planning processes. The addenda are included as Volume III of this plan.

To coordinate planning efforts, the steering committees from Aurora, Keizer, Silverton, and Woodburn participated in joint meetings facilitated by OPDR. The planning process was designed to: (1) result in addenda that are Disaster Mitigation Act 2000 compliant; (2) coordinate with the state’s plan and activities of OPDR; and (3) build a network of local organizations that can play an active role in plan implementation. The specific process, including the steering committee makeup and public outreach strategy for each city is documented in Section I of the respective city addenda and is incorporated herein by reference. The formal approval dates for each city are listed in Table 1.2 below.

Table 1.2 – Formal Marion County City Addenda Approval Dates

City	Formal Approval Date
Aurora	December 4, 2009
Keizer	December 30, 2009
Silverton	January 8, 2010
Woodburn	April 8, 2010

2010 Planning Process

In the fall of 2008, the Oregon Partnership for Disaster Resilience (OPDR) at the University of Oregon’s Community Service Center developed a Pre-Disaster Mitigation Planning Grant proposal in partnership with Oregon Emergency Management (OEM) and communities in the Willamette Valley to fund the update of local natural hazard mitigation plans. These communities included Marion, Linn, Klamath and Josephine Counties and the cities of Eugene and Springfield. FEMA awarded the grant in the summer of 2009, and Marion County’s plan update process began in January, 2010. A graduate student team from the University of Oregon’s

Community Planning Workshop (CPW) facilitated the plan update process and documented efforts, while OPDR oversaw the planning process and completed final edits to the plan.

Marion County’s Emergency/Safety Manager served as the convener for Marion County’s Natural Hazard Mitigation Plan update process. The Emergency/Safety Manager developed a new plan steering committee to review and update the mitigation plan and to oversee the planning process. New committee members were needed because of staff turnover during the previous five years. The steering committee consisted of individuals from public and non-profit organizations listed in Table 1.3 below. New steering committee members are indicated with an asterisk (*).

Table 1.3 Marion County Steering Committee

Name	Job Title	Organization
Don Clark*	Sign Shop Supervisor	Marion County Public Works
Bryan Cosgrove*	City Manager	City of Silverton
Barb Young*	Senior Policy Advisor	Marion County Board of Commissioners
Burnie Pearson	GIS Analyst 2	Marion County Information Technology
Jeff Kresner*	Emergency Services Director	American Red Cross
John Vanderzanden	Program Manager	Marion County Emergency Management
Kevin Watson*	Asst to City Manager/Emerg Mgr	City of Keizer
Krista Rowland	Program Coordinator	Marion County Emergency Management
Les Sasaki	Principle Planner	Marion County Public Works
Matt Knudsen*	Environmental Specialist	Marion County Public Works
Rick Lewis*	Chief of Police	Silverton Police Department
Roger Stevenson	Emergency Manager	City of Salem
Russ Dilley*	Parks Maintenance	Marion County Public Works
Brandon Reich*	Associate Planner	Marion County Planning Division

The Marion County Natural Hazards Mitigation Plan update was part of a regional effort to update mitigation plans for communities throughout the mid-Willamette Valley. In addition to Marion County, OPDR assisted Linn and Benton Counties and the city of Albany in updating their local mitigation plans by facilitating a four-part training series to train each community on the six stages of updating a local natural hazards mitigation plan. The four training events occurred between January and May 2010. OPDR also reviewed plan drafts and provided participating communities with print and web-based resources that included:

- Plan Templates;
- Natural Hazards Mitigation Plan Update Training Manual;
- Regional Profile and Risk Assessment; and

- Household Preparedness Survey Report (Linn County only).

The planning process and associated resources used to update Marion County's multi-jurisdictional Natural Hazards Mitigation Plan were developed by OPDR. The plan update process was designed to: (1) result in a plan that continues to be DMA 2000 compliant; (2) coordinate with the State's plan, as well as existing plans and policies within Marion County; and (3) build a network of jurisdictions and organizations that can play an active role in plan implementation. The following is a summary of major activities included in the planning process.

Plan Update Work Sessions

Marion County Plan Update Introductory Meeting (December 2009)

On December 22, 2009, OPDR met with the Marion County Emergency Safety Manager and representatives from Linn and Benton Counties. The purpose of the meeting was to (1) discuss the process to update the mitigation plan, (2) set dates for future community meetings and plan update training events (Linn and Benton counties only), (3) identify plan update steering committee members, and (4) identify community stakeholders to be interviewed during the plan update process. In addition, OPDR informed meeting participants that a Community Planning Workshop (CPW) team of graduate students from the University of Oregon would be writing the community overview sections for Linn and Benton Counties' plans, and would assist OPDR in facilitating the plan update process for Marion County. Meeting materials for the December 2009 meeting can be found in Appendix B Planning and Public Process.

Plan Update Kickoff Meeting (January 2010)

On January 28, 2010, OPDR and the CPW student team held a plan update kickoff meeting with the Marion county steering committee. The purpose of the meeting was to (1) give the committee an overview of the plan update process, (2) discuss committee roles and responsibilities, and (3) identify strategies for community involvement during the update process. Using the information gathered from this meeting, the CPW team developed a list of public involvement strategies that the steering committee agreed to implement. Meeting materials and sign-in sheets from the January 28 meeting can be found in Appendix B Planning and Public Process.

Risk Assessment Meeting (March 2010)

On March 3, 2010, OPDR and the CPW student team held a hazard and issue identification workshop with the Marion county steering committee. The purpose of the meeting was to (1) review hazard identification information (e.g. causes and characteristics, location, extent, previous occurrences, probability and vulnerability assessments) for each of the hazards addressed in the plan, and (2) to identify community vulnerabilities to those natural hazards. Using this information, OPDR updated the mitigation plan's hazard chapters and identified new

mitigation action items for the update. Meeting materials and sign-in sheets from the March 3 meeting can be found in Appendix B Planning and Public Process.

Mission, Goals, and Action Items Meeting (April 2010)

On April 15, 2010, OPDR and the CPW student team held a mission, goals, and action item meeting with the Marion County steering committee. The purpose of the meeting was to (1) review and update the mitigation plan's mission and goal statements, (2) discuss mitigation actions from the 2006 mitigation plan, and (3) discuss new action items for the 2010 update. Meeting materials and sign-in sheets for the April 15 work session can be found in Appendix B Planning and Public Process.

Plan Implementation and Maintenance Meeting (May 2010)

On May 11, 2010, OPDR and the CPW student team held a plan implementation and maintenance meeting with the Marion County steering committee. The purpose of the meeting was to (1) identify members of the coordinating body and the convener for continued plan implementation, (2) review and update the plan's method and schedule for monitoring and evaluating the plan, (3) prioritize mitigation action items, and (4) identify continued public involvement strategies. Meeting materials and sign-in sheets for the May 11 work session can be found in Appendix B Planning and Public Process.

Public Involvement

Stakeholder Survey

The stakeholder survey provided an opportunity for community stakeholders and steering committee members to give feedback on issues related to natural hazard mitigation planning in Marion County. The purpose of the survey was to identify local perceptions of natural hazard mitigation planning in the county and assess the extent to which organizations are working to achieve mitigation goals. The survey contained 13 questions divided into sections regarding perceived natural hazard threats, mitigation priorities, partnerships and support, and organizational specific information. OPDR administered the survey online in March 2010, distributing it to public, private, and non-profit organizations. A total of 31 individuals participated. OPDR used information from the survey to develop mitigation action items for the update. The complete survey report can be found in Appendix D.

Plan Review

The Marion County steering committee served as the primary plan review body. Upon completion of a final draft, Marion County posted a copy on the county website, and submitted a press release on December 8, 2010 that described the plan update process and requested feedback on plan content. The Marion County website posted the following information for the public to review:

Marion County Seeks Public Input on Update to Multi-Jurisdictional Natural Hazards Mitigation Plan

(Salem, OR) - Marion County is currently in the process of updating the existing multi-jurisdictional Natural Hazards Mitigation Plan. This work is being performed in cooperation with the Oregon Partnership for Disaster Resilience and Oregon Emergency Management utilizing funds obtained from the Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation Grant Program. With re-adoption of the plan, Marion County will maintain its eligibility to apply for federal funding towards natural hazard mitigation projects. This local planning process includes a wide range of representatives from city government, local utility providers, and the Red Cross, among others.

A natural hazards mitigation plan provides communities with a set of goals, action items, and resources designed to reduce risk from future natural disaster events. Engaging in mitigation activities provides jurisdictions with a number of benefits, including reduced loss of life, property, essential services, critical facilities and economic hardship; reduced short-term and long-term recovery and reconstruction costs; increased cooperation and communication within the community through the planning process; and increased potential for state and federal funding for recovery and reconstruction projects. A draft version of the updated Marion County Natural Hazards Mitigation Plan will be available for public comment between December 8, 2010, and December 22, 2010. Copies of the plan are available on the Marion County website at <http://www.co.marion.or.us/PW/EmergencyManagement/> or at www.opdr.uoregon.edu.

If you have any questions regarding the Marion County Natural Hazards Mitigation Plan or the update process in general, please call Josh Bruce, Assistant Director for the Oregon Partnership for Disaster Resilience at (541) 346-7326 or e-mail jdbruce@uoregon.edu.

The plan was available for public review between December 8, 2010 and January 3, 2011. Neither Marion County nor OPDR received feedback in response to the solicitation. Additional public outreach activities are described elsewhere in this report.

ODPR's website (<http://opdr.uoregon.edu>) served as an additional outreach tool to communities. The webpage was used to provide the public with local contact information and updates on the planning process. The final adopted and approved plan is posted on the University of Oregon Libraries' Scholar's Bank Digital Archive.

How is the Plan Organized?

Each volume of the mitigation plan provides specific information and resources to assist readers in understanding the hazard-specific issues

facing county citizens, businesses, and the environment. Combined, the sections work in synergy to create a mitigation plan that furthers the community's mission to create a disaster resilient Marion County. This plan structure enables stakeholders to use the section(s) of interest to them.

Volume I: Multi-jurisdictional Natural Hazard Mitigation Plan

Section 1: Introduction

The Introduction describes the methodology and purpose of developing the Marion County Natural Hazards Mitigation Plan.

Section 2: Community Overview

This section provides an overall description of Marion County, and includes a community profile and a description of the county's government structure. Additionally, the community overview identifies existing county plans, policies, and programs, and active community organizations. This section allows readers to gain an understanding of the county's assets and characteristics that may be impacted by natural hazards. Likewise, the community overview provides a description of the county's ability to manage risk and adapt to hazard event impacts.

Section 3: Mission, Goals and Action Items

This section documents the plan's mission, goals, and actions. Actions address community vulnerabilities that are identified within Volume II: Hazard Specific Annexes.

Section 4: Plan Implementation and Maintenance

This section provides information on the implementation and maintenance of the plan. It describes the process for prioritizing projects, and includes a suggested list of tasks for semi-annual plan maintenance and five-year plan update processes.

Volume II: Hazard-Specific Annexes

The hazard annexes describe the risk assessment process and summarize the best available local hazard data. A hazard summary is provided for each of the hazards addressed in the plan. The summaries include documentation of past hazard events, and a description of each hazard's location, extent, potential impacts, and probability of occurrence. Additionally, the hazard annexes describe Marion County's vulnerabilities and risks to each hazard, as well as any existing mitigation strategies that have previously been implemented.

The following hazards are addressed within the hazard specific annexes:

- **Dam Failure**

Marion County is vulnerable to dam failure due to its proximity to the Big Cliff, Detroit, Funrue, and Silver Creek dams. While the likelihood of a dam failure is very small, Marion County's communities remain vulnerable to the hazard.

- **Drought**

Drought is a normal, recurrent feature of climate. It is a temporary condition and differs from aridity because the latter is restricted to low rainfall regions and is a permanent feature of climate. Drought can affect all segments of Marion County's population, particularly those employed in water-dependent activities (e.g., agriculture, hydroelectric generation, recreation, etc.). Also, domestic waterusers may be subject to stringent conservation measures (e.g., rationing) and could be faced with significant increases in electricity rates.

- **Earthquake**

All of Marion County is subject to the impacts of earthquakes, including major earthquakes on the Cascadia Subduction Zone off the Oregon coast, and also smaller crustal earthquakes within western Oregon. The 1993 Scotts Mills earthquake (magnitude 5.7) is the most recent damaging earthquake that originated in Marion County and caused significant damage throughout the county.

- **Flood**

Nearly every community in Marion County is affected by flood hazards, at least to some extent. Most communities in Marion County have floodplain areas that have been mapped by FEMA. These include areas along the Willamette River and Santiam River, as well as areas along smaller creeks. Other portions of Marion County, outside of the mapped floodplains, are also subject to significant, repetitive flooding from local storm water drainage.

- **Landslide**

Portions of Marion County, especially in the Cascades and South Salem Hills, are subject to landslides or debris flows (mudslides), which may affect buildings, roads, and utilities.

- **Volcanic Event**

Several of the active volcanoes in Oregon and Washington are located relatively near Marion County, including Mount St. Helens and Mt. Hood. In the past 200 years, seven of the Cascade volcanoes in the United States have erupted, including: Mt. Baker, Glacier Peak, Mt. Rainier, Mount St. Helens, Mt. Hood, Mt. Shasta, and Mt. Lassen. Within Marion County, the impacts of volcanic events are likely to be only minor ash falls, with perhaps some impact on public water supplies.

- **Wildfire**

Marion County's most recent significant wildfire was the 2003 B & B Complex fire. The county remains vulnerable to wildfire events and has identified 17 areas in the county as vulnerable wildland/urban interface communities.

- **Windstorm**

Wind storms occur yearly, and more destructive storms occur once or twice per decade. All of Marion County is at risk for wind storms. Due to the multitude of variables, such as wind speed, direction, and temperature, each storm is capable of causing extensive damage in any part of the county.

- **Winter Storms**

The winter storms that affect Marion County are typically large cyclonic low-pressure systems that move in from the Pacific Ocean and affect large areas of Oregon and/or the whole Pacific Northwest. These storms are most common from October through March. The most likely impact of snow and ice events on Marion County are road closures limiting access to/egress from some areas, especially roads to higher elevations. Winter storms with heavy wet snow or high winds and ice storms may also result in power outages from downed transmission lines and/or poles.

Volume III: City/Special District Addendums

Volume III of the plan is reserved for city addenda for the cities of Aurora, Keizer, Silverton, and Woodburn. The addenda describe how each city's risk from natural hazards varies from that of the county and includes city-specific action items and plan implementation and maintenance strategies.

Volume IV: Resource Appendices

The resource appendices are designed to provide the users of Marion County's multi-jurisdictional Natural Hazards Mitigation Plan with additional information. Appendices supplement information provided in the Natural Hazards Mitigation Plan, and include resources that assist with plan implementation.

Appendix A: Action Item Forms

This appendix contains the detailed action item forms for each of the mitigation strategies identified in this plan.

Appendix B: Planning and Public Process

This appendix includes documentation of all the countywide public processes used to develop the 2005 plan and for the 2010 update. It includes a memo that details changes made to the plan during the 2010 plan update, meeting materials, and documentation of public involvement.

Appendix C: Economic Analysis of Natural Hazards Mitigation Projects

This appendix describes the Federal Emergency Management Agency's (FEMA) requirements for benefit cost analysis in natural hazards mitigation, as well as various approaches for conducting economic analyses for proposed mitigation activities.

Appendix D: Stakeholder Survey Report

This appendix provides the complete report of the survey results completed by the Marion County steering committee and stakeholders.

Appendix E: Resource Directory

The resource directory includes county, regional, state, and national resources and programs that may be of technical or financial assistance to Marion County during plan implementation.

