

Section 3:

Mitigation Strategy

This section of the NHMP addresses 44 CFR 201.6(c)(3) – Mitigation Strategy. The information provided in Section 2 and the Hazard Annexes provide the basis and justification for the mitigation actions identified in this plan. This section provides information on the process used to develop a mission, goals and action items. This section also includes an explanation of how the County intends to incorporate the mitigation strategies outlined in the plan into existing planning mechanisms and programs such as the County comprehensive land use planning process, capital improvement planning process, and building codes enforcement and implementation. City specific mission, goal and action item information is located in Volume III: City/Special District Addendums.

Mitigation Plan Mission

A mission statement is a philosophical or value statement that answers the question “Why develop a plan?” In short, the mission states the purpose and defines the primary function of the County’s multi-jurisdictional Natural Hazards Mitigation Plan. A good mission is an action-oriented statement of the plan’s reason to exist. It is broad enough that it need not change unless the community environment changes.

The mission of the Clackamas County Natural Hazards Mitigation Plan is to:

Promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural hazards.

This can be achieved by increasing public awareness, documenting the resources for risk reduction and loss-prevention, and identifying activities to guide the county towards building a safer, more sustainable community.

Mitigation Plan Goals

Goals are designed to drive actions and they are intended to represent the general end toward which the county effort is directed. Goals identify how the County intends to work toward mitigating risk from natural hazards. The plan goals help guide the direction of future activities aimed at reducing risk and preventing loss from natural hazards. In addition, the goals listed below are multi-objective in nature, and serve as checkpoints for the various county agencies and organizations involved in implementing mitigation actions.

Meetings with the Hazard Mitigation Advisory Committee, previous hazard event reports, and the previous county Natural Hazards Mitigation Plans served as methods to obtain input and identify priorities in developing goals for reducing risk and preventing loss from natural hazards in Clackamas County.

The goals of the Clackamas County Natural Hazards Mitigation Plan are organized under several broad categories. The goals are:

PROTECT LIFE AND PROPERTY

- Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to natural hazards.
- Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic hazards.
- Improve hazard assessment information to make recommendations for discouraging new development and encouraging preventative measures for existing development in areas vulnerable to natural hazards.

ENHANCE NATURAL SYSTEMS

- Balance watershed planning, natural resource management, and land use planning with natural hazards mitigation to protect life, property, and the environment.
- Preserve, rehabilitate, and enhance natural systems to serve natural hazard mitigation functions.

AUGMENT EMERGENCY SERVICES

- Establish policy to ensure mitigation projects for critical facilities, services, and infrastructure.
- Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, and business, and industry.
- Coordinate and integrate natural hazards mitigation activities, where appropriate, with emergency operations plans and procedures.

ENCOURAGE PARTNERSHIPS FOR IMPLEMENTATION

- Strengthen communication and coordinate participation among and within public agencies, citizens, non-profit organizations, business, and industry to gain a vested interest in implementation.
- Encourage leadership within public and private sector organizations to prioritize and implement local, county, and regional hazard mitigation activities.

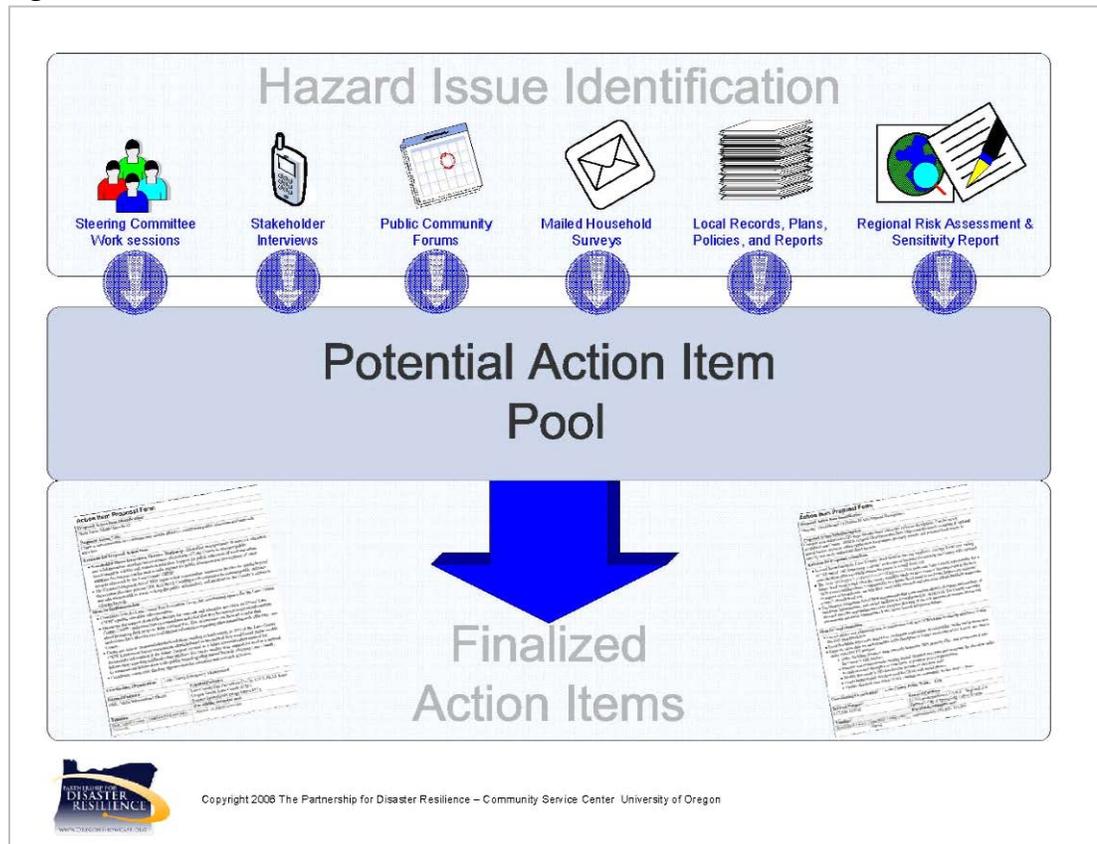
PROMOTE PUBLIC AWARENESS

- Develop and implement education and outreach programs to increase public awareness of the risks associated with natural hazards.
- Provide information on tools, partnership opportunities, and funding resources to assist in implementing mitigation activities.

Mitigation Plan Action Items

Action items are detailed recommendations for activities that local departments, citizens and others could engage in to reduce risk. The action items identified through the planning process form the core of the mitigation strategy. They address both multi-hazard (MH) and hazard-specific issues. Action items can be developed through a number of sources. The figure below illustrates some of these sources. A description of how the plan’s mitigation actions were developed is provided below.

Figure 3.1 Action Item Sources



Source: Partnership for Disaster Resilience, 2006

The Hazard Mitigation Advisory Committee decided to modify the prioritization of action items. Because all action items are important to the mitigation plan, the group prioritized the action items with tiered priorities. Each functional category contains a set of specific action items. Appendix A provides a detailed description of each action item. The prioritization structure groups the top action item for each category. Categories include:

EDUCATION AND OUTREACH

Enhancing individual jurisdictional responsibility and accountability is a low-cost, high-benefit way to increase resilience throughout the county. Education and outreach programs already exist. The actions in this category are intended in some cases for the general public, but are predominantly aimed at better educating and informing local officials about actions they can take to make their communities more disaster resilient.

GIS/MAPPING

The actions in this category address mapping needs that are essential to the plans risk assessment of each hazard. The ability to utilize data gathered by the county's GIS department and other local and state organizations allows the risk assessment to continually be updated and reviewed.

MAINTENANCE/PLANNING

Actions in this category stress the importance of maintaining elements of this Clackamas County NHMP, the date that supports the Clackamas County NHMP, and also promote the development of plans and reports that support the goals of the Clackamas County NHMP.

CRITICAL INFRASTRUCTURE/ESSENTIAL FACILITIES

The actions within this category address critical infrastructure and public facilities that are essential to the basic functioning of society, and fundamentally necessary for effective emergency response, as well as recovery and redevelopment efforts following a disaster event.

LAND USE/DEVELOPMENT

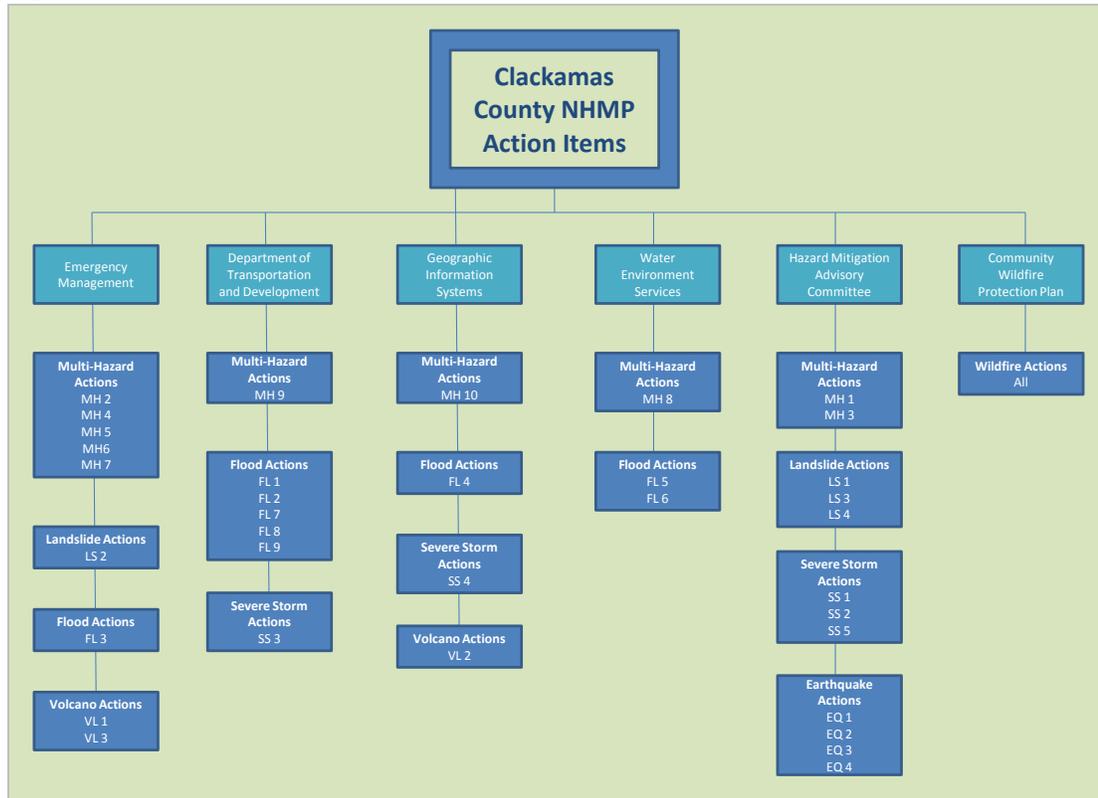
Actions within this category seek to utilize laws, regulations, and other tools regarding the use and development of land as methods of protecting lives and property.

Action Item Framework

Many of the Clackamas County multi-jurisdictional Natural Hazards Mitigation Plan's recommendations are consistent with the goals and objectives of the County's existing plans and policies. Where possible, Clackamas County will implement the multi-jurisdictional Natural Hazard Mitigation Plan's recommended actions through existing plans and policies. Plans and policies already in existence have support from local residents, businesses, and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, and can adapt easily to changing conditions and needs.¹ Implementing the Natural Hazard Mitigation Plan's action items through such plans and policies increases their likelihood of being supported and implemented. Below, Figure 3.2 outlines which county department or committee is the lead responsible for implementing and documenting progress on each action item.

¹ Burby, Raymond J., ed. 1998. Cooperating with Nature: Confronting Natural Hazards with Land-Use Planning for Sustainable Communities.

Figure 3.2 Action Item Framework:



Source: Hazard Mitigation Advisory Committee, 2012

Action Item Prioritization

The following subsection describes how the HMAC prioritized the action items, listed in full detail in Appendix A. During the May 28, 2012 mitigation strategy meeting, the RARE participant facilitated a discussion regarding the existing action item categorization. The HMAC agreed to re-categorize the action items, reword a number of existing actions to make them more specific and to remove others that no longer apply (see Appendix A for an updated list of action items). The HMAC established the plan’s new action item categories as presented above. During the June 28, 2012 HMAC meeting, the RARE participant presented an overview of the action item changes and received consent from the HMAC on the implemented changes.

Listed below are the most critical (top priority) action items, determined by the Hazard Mitigation Advisory Committee, proposed for implementation within each category:

EDUCATION AND OUTREACH

- FL-3. Develop better flood warning systems.

GIS/MAPPING

- MH-10. Update County Comprehensive Plan to integrate most current natural hazard mapping data for Clackamas County and make available to county GIS to improve technical analysis of natural hazards.

- FL-4. Maintain data and mapping for floodplain information within the county, and identify and map flood-prone areas outside of designated floodplains.

MAINTENANCE/PLANNING

- FL-7. Establish a framework to compile and coordinate surface water management plans and data throughout the county.

CRITICAL INFRASTRUCTURE/ESSENTIAL FACILITIES

- MH-6. Update and maintain inventories of at-risk buildings and infrastructure and prioritize mitigation projects.

LAND USE/DEVELOPMENT

- MH-8. Use technical knowledge of natural ecosystems and events to link natural resources management and land use organizations to mitigation activities and technical assistance.
- MH-9. Enhance strategies for debris management.
- FL-5. Encourage development of acquisition and management strategies to preserve open space for flood mitigation, fish habitat, and water quality in the floodplain and reduce risk to flood prone properties as well as preserve space for open space property.

Although this methodology provides a guide for the HMAC in terms of implementation, the HMAC has the option to implement any of the action items at any time. This option to consider all action items for implementation allows the committee to consider mitigation strategies as new opportunities arise, such as capitalizing on funding sources that could pertain to an action item that is not the highest priority.

Action Item Worksheets

Each action item has a corresponding action item worksheet describing the activity, identifying the rationale for the project, identifying potential ideas for implementation, and assigning coordinating and partner organizations. The action item worksheets can assist the community in pre-packaging potential projects for grant funding. The worksheet components are described below. These action item worksheets are located in Appendix A.

RATIONALE OR KEY ISSUES ADDRESSED

Action items should be fact-based and tied directly to issues or needs identified throughout the planning process. Action items can be developed at any time during the planning process and can come from a number of sources, including participants in the planning process, noted deficiencies in local capability, or issues identified through the risk assessment. The rationale for proposed action items is based on the information documented in Section 2 and the Hazard Annexes.

IDEAS FOR IMPLEMENTATION

The ideas for implementation offer a transition from theory to practice and serve as a starting point for this plan. This component of the action item is dynamic, since some ideas may prove to not be feasible, and new ideas may be added during the plan maintenance

process. Ideas for implementation include such things as collaboration with relevant organizations, grant programs, tax incentives, human resources, education and outreach, research, and physical manipulation of buildings and infrastructure.

IMPLEMENTATION THROUGH EXISTING PROGRAMS

The Clackamas County multi-jurisdictional Natural Hazard Mitigation Plan includes a range of action items that, when implemented, will reduce loss from hazard events in the County. Within the plan, FEMA requires the identification of existing programs that might be used to implement these action items. Clackamas County currently addresses statewide planning goals and legislative requirements through its comprehensive land use plan, capital improvements plan, mandated standards and building codes. To the extent possible, Clackamas County will work to incorporate the recommended mitigation action items into existing programs and procedures.

COORDINATING ORGANIZATION:

The coordinating organization is the public agency with the regulatory responsibility to address natural hazards, or that is willing and able to organize resources, find appropriate funding, or oversee activity implementation, monitoring and evaluation.

INTERNAL AND EXTERNAL PARTNERS:

The internal and external partner organizations listed in the Action Item Worksheets are potential partners recommended by the project Steering Committee but not necessarily contacted during the development of the plan. The coordinating organization should contact the identified partner organizations to see if they are capable of and interested in participation. This initial contact is also to gain a commitment of time and/or resources toward completion of the action items.

Internal partner organizations are departments within the County or other participating jurisdiction that may be able to assist in the implementation of action items by providing relevant resources to the coordinating organization.

External partner organizations can assist the coordinating organization in implementing the action items in various functions and may include local, regional, state, or federal agencies, as well as local and regional public and private sector organizations.

PLAN GOALS ADDRESSED:

The plan goals addressed by each action item are identified as a means for monitoring and evaluating how well the mitigation plan is achieving its goals, following implementation.

TIMELINE:

All broad scale action items have been determined to be ongoing, as opposed to short-term or long-term. This is because the action items are broad ideas, and although actions may be implemented to address the broad ideas, the efforts should be ongoing. For example, although *Flood Action Item #3: Develop better flood warning systems* has been addressed by working with the National Weather Service to install flood staff gauges around troublesome areas, the HMAC will continue this effort of mitigating flood loss.

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Natural Hazard	Action Item	Coordinating Organization	Priority	2012 Update	Plan Goals Addressed				
					Protect Life and Property	Augment Emergency Services	Encourage Partnerships & Implementation	Promote Public Awareness	Enhance Natural Systems

Education and Outreach

Multi-Hazard #4	Identify, improve, and sustain collaborative programs focusing on the real estate and insurance industries, public and private sector organizations, and individuals to avoid activity that increases risk to natural hazards	CCEM - Lead PGA CCEM	High	<ul style="list-style-type: none"> In March 2012, Clackamas County published a brochure, "You May Need Flood Insurance" to promote consideration for NFIP Preferred Risk policies. The brochure targeted residents and business that may be at lower risk but can take advantage of coverage if flooded. Clackamas County Emergency Management briefed Committee for Citizen Involvement Clackamas County Emergency Management and Planning Departments worked with the Oregon Partnership for Disaster Resilience on a cost-effectiveness study of the Clackamas County CRS program, titled <i>Clackamas County Community Rating System Program Review, Nov. 2011.</i> 	✓		✓	✓		
Multi-Hazard #7	Strengthen emergency services preparedness and response by linking emergency services with natural hazard mitigation programs, and enhancing and implementing public education programs on a regional scale.	CCEM - Lead DTD PGA GIS H35	High	Clackamas County continues to participate in safety fairs all over the county. Each city sponsors workshops in conjunction with the Emergency Management Department. The county's Hazard Mitigation Specialist continues to present at local and regional workshops, conferences, and fairs.	✓	✓		✓		
Flood #1	Identify opportunities to educate people within Clackamas County's public and private flood prone properties and identify feasible mitigation options	DTD: Planning - Lead HMAC	High	<ul style="list-style-type: none"> The CRS continues to be updated annually. The biggest void that the HMAC and Planning Department faces is the lack of knowledge on the part of insurance lenders. The Sandy Sustainable Flood Recovery Group continues education and outreach in Sandy. 	✓		✓			
Flood #3*	Develop better flood warning systems	CCEM - Lead PGA DTD	Medium	Clackamas County Emergency Management worked with the National Weather Service to install flood staff gauges on the Molalla River at Shady Dell and three flood staff gauges in the upper Sandy River Basin. The county is currently applying for a DR-19560-OR HMGP project to install five electronic river gauges in the upper Sandy Basin.	✓	✓				
Flood #8	Encourage purchase of flood insurance	DTD: Planning - Lead HMAC CCEM	Low	New Action Item, 2012.	✓			✓		
Landslide #1	Continue to improve knowledge of landslide hazard areas and understanding of vulnerability and risk to life and property in hazard-prone areas	HMAC - Lead GIS	Medium	The county is working with DOGAMI to finalize a hazard assessment done in 6 different quadrants of the county. The maps and assessments are still not finalized, but have worked with the public to identify discrepancies.	✓			✓		
Landslide #3	Continue to limit activities in identified potential and historical landslide areas through regulation and public outreach	HMAC	High	DOGAMI continues to map out landslide hazard areas and get the word out. There haven't been any changes in land use ordinances, however land use regulation picks up new information automatically. Steep slope land use maps continue to refer to hazardous areas.	✓			✓	✓	
Severe Storm #2	Continue to educate the public on severe storm mitigation activities.	HMAC	Medium	Ongoing.	✓			✓		
Earthquake #2	Encourage purchase of earthquake hazard insurance	HMAC	Low	CCEM continues to encourage the purchase of earthquake hazard insurance at annual preparedness fairs all over the county.	✓			✓		
Earthquake #4	Encourage reduction of nonstructural and structural earthquake hazards in homes, schools, businesses, and government offices through public education	HMAC	Medium	Ongoing.	✓	✓		✓		
Volcano #3	Strengthen response and recovery programs, and work with the USGS-CVO to enhance public education programs for volcanic eruption hazards.	CCEM	Low	<ul style="list-style-type: none"> CCEM participated in a 2010 presentation to the Congressional Hazards Caucus in Washington DC to promote improvements for volcano early warning. CCEM provided evaluation of FEMA/USGS Volcano Crisis Awareness Course in 2011 to complete FEMA's final course certification process. Worked with USGS Geographer Nate Wood on a multi-hazard vulnerability study for the Hoodland area, with an emphasis on assessing volcanic risk. 	✓	✓		✓		

*Indicates that the action item also belongs in other categories

*Indicates that the action item is the top action of focus

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					Protect Life and Property	Augment Emergency Services	Encourage Partnerships & Implementation	Promote Public Awareness	Enhance Natural Systems

GIS/Mapping									
Multi-Hazard #10**	Update County Comprehensive Plan to integrate most current natural hazard mapping data for Clackamas County and make available to county GIS to improve technical analysis of earthquake hazards.	GIS-Lead DTD: Planning	Medium	The current Clackamas County Comprehensive Plan does not include any earthquake hazard mapping.	✓		✓		
Flood #4*	Maintain data and mapping for floodplain information within the county, and identify and map flood-prone areas outside of designated floodplains	GIS-Lead DTD WES	Medium	<ul style="list-style-type: none"> Clackamas County GIS has access to the newest FEMA 2008 flood plain information. This is displayed on the hazard plain flood map 1. GIS currently has 2004-2007 LIDAR coverage for a large portion of the county; 2ft contours are available for most of this coverage. GIS just placed a request with DOGAMI to receive some new limited area LIDAR data from 2011 that was used in a recent study of the Sandy River flooding and channel migration zones. GIS has not used the available LIDAR data to update or create any hazard layers at this time. The GIS department has also coordinated with Emergency Management to map property losses from the 2011 flooding out along the Sandy. DOGAMI 2011 Mt Hood MH study uses LIDAR to locate building footprints in the 100 and 500 year flood plain. DOGAMI Channel Migration Zone Study for Sandy River estimates hazard areas for potential movement of river channel. 	✓				
Severe Storm #4	Map and publicize locations around the county that have the highest incidence of extreme windstorms.	GIS	Low	The county's GIS department is unaware of the PGE power outage prone area information. If available, this information would be useful if the HMAC wanted an action item dedicated to creating and distributing educational flyers or similar to individuals living in these areas. GIS can easily generate mailing lists of folks in defined areas. At this time, no progress has been reported.	✓		✓	✓	
Volcano #2	Utilize existing risk assessments and collaborate with USGS-CVO and related agencies to develop ash fall models that are specific to Clackamas County	GIS-Lead CCEM	Low	<ul style="list-style-type: none"> USGS funded DOGAMI MH study of proximal and distal land-based exposure to volcano hazards for Sandy River and Hood River valleys. This may provide the basis for vulnerability assessments for near-field ash hazard assessments. From the GIS standpoint, no one has done or has access to any ash fall models or maps at this time. GIS is a tool that could model some of this if the base data was available. Once the DOGAMI Mt Hood study becomes available, it may provide the county with initial debris flow and possibly ash fall models. 	✓		✓	✓	

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					Protect Life and Property	Align Emergency Services	Encourage Partnerships & Implementation	Promote Public Awareness	Enhance Natural Systems

Maintenance/Planning										
Multi-Hazard #1	Integrate the goals and action items from the Clackamas County Natural Hazard Mitigation Plan into existing regulatory documents and programs, where appropriate.	HMAC	High	<ul style="list-style-type: none"> The HMAC continues to work with the county on integrating action items for the NHMP into regulatory documents and programs. Forest regulation has been revised with more enforcement and wildfire clearance set backs. Capital funds are being used for earthquake mitigation activities and capital projects are addressing an erosion study. Clackamas County Facilities Management is working with Emergency Management to create a Damage Assessment policy and process. The policy and process will include building and functions priorities identified, key department functions, and a process to assess and report on buildings status. As of May 2012, there have been three different meetings discussing various portions of the policy and process. Facilities Management has received training on FEMA 74 - Earthquake Hazards mitigation for Nonstructural Elements. Facilities Management has started a process of reviewing buildings and implementation of action to reduce earthquake hazards within the buildings. Currently, the Central Utility Plant (CUP) has been completed. The Development Services Building (DSB) and Public Services Building (PSB) are currently being reviewed. Facilities Management will work on creating a policy for this process. 				✓		
Multi-Hazard #2	Identify and pursue funding opportunities to develop and implement local and county mitigation activities.	CCEM - Lead DTD	High	<p>The following are different funding opportunities used to develop and implement local and county mitigation activities:</p> <ul style="list-style-type: none"> 1 FMA grant award for flood elevation 1 HMGP award for flood elevation 5 HMGP awards for flood acquisitions 1 PDM award for seismic retrofit of water treatment facility \$2 million in wildfire mitigation for ODF for wildfire mitigation and fuels reduction activities 				✓		
Multi-Hazard #3	Establish a formal role for the Clackamas County Natural Hazards Mitigation Committee to develop a sustainable process for implementing, monitoring, and evaluating countywide mitigation activities	HMAC	Medium	<p>The Hazard Mitigation Advisory Committee continues to meet annually. The following are the dates of past HMAC meetings prior to the 2011-2012 NHMP update process:</p> <ul style="list-style-type: none"> April 15, 2008 March 30, 2009 November 18, 2009 September 22, 2010 <p>The Sandy Sustainable Flood Recovery Group has continued to meet twice a month since March 2011 to discuss long-term mitigation activities.</p>				✓		
Multi-Hazard #5	Develop public and private partnerships to foster natural hazard mitigation program coordination and collaboration in Clackamas County	CCEM - Lead CCED DTD	Medium	Since 2007 there have been two county-wide, Presidential Disaster Declarations. As a result, there has been outreach to affected residents regarding SBA loans. There has also been some outreach with the Chamber of Commerce.				✓		

Natural Hazard	Action Item	Coordinating Organization	Priority	2012 Update	Plan Goals Addressed				
					Protect Life and Property	Augment Emergency Services	Encourage Partnerships & Implementation	Promote Public Awareness	Enhance Natural Systems

Maintenance/Planning, Cont.

Multi-Hazard #10**	Update County Comprehensive Plan to integrate most current natural hazard mapping data for Clackamas County and make available to county GIS to improve technical analysis of earthquake hazards.	GIS - Lead DTD: Planning	Medium	The current Clackamas County Comprehensive Plan does not include any earthquake hazard mapping.	✓		✓		
Flood #7*	Establish a framework to compile and coordinate surface water management plans and data throughout the county.	DTD: Planning - Lead WES GIS	Medium	At this point, there are no resources or support available to make progress thus far.	✓		✓		
Flood #9	Develop a floodplain management plan as a standalone for the CRS program	DTD: Planning - Lead CCEM	Medium	New Action Item, 2012.			✓		
Landslide #2	Identify safe evacuation routes in high-risk debris flow and landslide areas.	CCEM	Medium	<ul style="list-style-type: none"> •There is currently a USGS report in review that examines concentrations of residents, employees and visitors in the Hoodland area with seasonal variability to serve as a tool for evacuation planning. •DOGAMI MH study for Mt. Hood contains exposure analysis for landslide and debris flow hazards in the Sandy River Basin. 	✓	✓			
Severe Storm #1	Develop and implement programs to coordinate maintenance and mitigation activities to reduce risk to public infrastructure from severe storms	HMAC	Medium	Ongoing.		✓	✓		
Severe Storm #3	Monitor and implement programs to keep trees from threatening lives, property, and public infrastructure during windstorm events	DTD: Roads Division	High	Ongoing.		✓	✓		
Volcano #1	Work with the state and other impacted jurisdictions to update and exercise the Mount Hood Inter-Agency Coordination Plan	CCEM	Medium	Clackamas County Emergency Management has convened the Mt Hood Plan Facilitation Committee twice. CCEM has also worked with CVO and TVF&R on delivering a Mt Hood table-top scenario to elected officials from around the greater Portland Metro area.		✓	✓	✓	

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**Indicates that the action item is the top action of focus

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Critical Infrastructure/Essential Facilities										
Multi-Hazard #6*	Update and Maintain inventories of at-risk buildings and infrastructure and prioritize mitigation projects	CCEM - Lead DTD GIS DTD: Building Codes Facilities	High	The Maintenance Department is working with Emergency Management to develop a list/inventory of the at-risk buildings and infrastructure. Emergency Management maintains the prioritized list. The county also utilizes the, <i>Statewide Seismic Needs Assessment Using Rapid Visual Screening (RVS)</i> , DOGAMI Open-File Report O-07-02.	✓		✓			
Flood #6	Identify and address surface water drainage problematic sites for all parts of unincorporated Clackamas County	WES - Lead DTD: Roads Division GIS	Medium	An ongoing project for WES is replacing culverts throughout the county.	✓					
Earthquake #1	Pursue funding opportunities for structural and nonstructural retrofitting of homes, schools, businesses, and government offices that are identified as seismically vulnerable	HMAC	Medium	Funding source of limited implementation is the Oregon Seismic Rehabilitation Grant Program (SRGP) that depends on the State Treasurer to obligate bond capacity and the ability of the Oregon Military Department to incur bond debt into their operating budget.			✓	✓		
Earthquake #3	Encourage seismic strength evaluations for existing critical facilities in the County to identify vulnerabilities for mitigation of schools and universities, public infrastructure, and critical facilities to meet current seismic standards	HMAC	High	Currently, all new facilities must comply with and meet seismic standards. If someone moves into an old building, they must upgrade to current standards. DOGAMI recently did a windshield survey of schools, fire stations, police, and city halls. The focus was on action of existing buildings and information was shared with participants.	✓	✓				

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Land Use/Development

Multi-Hazard #8*	Use technical knowledge of natural ecosystems and events to link natural resources management and land use organizations to mitigation activities and technical assistance.	WES - Lead DTD	Medium	Clackamas County Department of Transportation and Develop is working with Water Environment Services and the Sandy River Watershed Council to use the best available data to accurately redefine the erosion zone and not just the flood zone. WES is working with LiDAR studies, and is working to map the meander zones to include all public infrastructure.						✓
Multi-Hazard #9*	Enhance strategies for debris management	DTD: Sustainability -Lead CCEM Community Environment DTD: Roads Metro RMG	High	The Clackamas County Sustainability department has one member attending the regional workgroup, as well as the FEMA Debris Management training. They have been training and working with the intent to talk with some of the city partners to come up with an action plan that will allow the county to refine the initial plan which received comments by FEMA staff but not yet approved.		✓	✓			✓
Flood #2	Recommend revisions to requirements for development within the floodplain, where appropriate	DTD - Lead GIS WES	Low	Clackamas County Planning is working on trying to get the residents more involved. The county dropped to a 4 in the CRS rating because those who benefit from the program are still reluctant to purchase insurance. At this point the cost of implementing the program is higher than the actual cost, so the county is working on ways to resolve this.	✓					
Flood #5*	Encourage development of acquisition and management strategies to preserve open space for flood mitigation, fish habitat, and water quality in the floodplain and reduce risk to flood prone properties as well as preserve space for open space property.	WES - Lead DTD	Medium	Metro recently purchased 31E15 02100, 23 acres along the Willamette River.	✓					✓
Landslide #4	Recommend construction and subdivision design that can be applied to steep slopes to reduce the potential adverse impacts from development.	HMAC	High	New Action Item, 2012.	✓			✓		✓
Severe Storm #5	Support/encourage electrical utilities to use underground construction methods where possible to reduce power outages from windstorms.	HMAC	Medium	•All new county electrical utilities are underground.			✓			✓

*Indicates that the action item also belongs in other categories

*Indicates that the action item is the top action of focus