

Appendix F contains specific information about the City of Lafayette, Oregon to support the Yamhill County Multi-Jurisdictional Hazard Mitigation Plan update.

This section describes the City of Lafayette’s planning process by listing Steering Committee membership, documenting public outreach efforts, summarizing the review process, and incorporating existing plans, studies, and reports used to develop this MHMP.

DMA 2000 Requirements: Planning Process

Multi-Jurisdictional Planning Participation

Requirement §201.6(a)(3): Multi-jurisdictional plans (e.g., watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process. Statewide plans will not be accepted as multi-jurisdictional plans.

Element

- Does the new or updated plan describe how each jurisdiction participated in the plan’s development?
- Does the updated plan identify all participating jurisdictions, including new, continuing, and the jurisdictions that no longer participate in the plan?

Planning Process

Requirement §201.6(b): An open public involvement process is essential to the development of an effective plan.

Documentation of the Planning Process

Requirement §201.6(b): In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

Element

- An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
- 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 nonprofit interests to be involved in the planning process; and
- Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

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

Element

- Does the plan provide a narrative description of the process followed to prepare the new or updated plan?
- Does the new or updated plan indicate who was involved in the planning process? (For example, who led the development at the staff level and were there any external contributors such as contractors? Who participated on the plan committee, provided information, reviewed drafts, etc.?)
- Does the new or updated plan indicate how the public was involved? (Was the public provided an opportunity to comment on the plan during the drafting stage and prior to the plan approval?)
- Does the new or updated plan discuss the opportunity for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the planning process?
- Does the planning process describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information?
- Does the updated plan document how the planning team reviewed and analyzed each section of the plan and whether each section was revised as part of the update process?

Source: FEMA, July 2008.

The City of Lafayette is dedicated to mitigating potential natural and technological hazard threats to its population and infrastructure. To fulfill the goal, the City organized a Hazard Mitigation Plan (HMP) development Steering Committee dedicated to identifying hazard threats and developing actions to mitigate damage and life losses from those threats.

Table F-1 contains the City’s Steering Committee participant list to augment the Yamhill County MHMP planning elements.

Table F-1. City of Lafayette Steering Committee	
Name	Agency/Department/Affiliation
Diane Rinks (Planning team leader)	City Administrator
Jim Anderson	Public Works Foreman
Don Leard	Mayor
Terry Lucich	Fire Chief

Table F-2 contains the summary of the City’s public involvement and planning meeting activities.

Table F-2. City of Lafayette Public Involvement Mechanisms	
Mechanism	Description
Newsletter	Mailed newsletter June 30, 2008 to introduce the project and request public input
Public Meetings	Held August 15 and 18, 2008 to present draft risk assessment and request public input
City Website	Posted Newsletter

CAPABILITY ASSESSMENT

Table F-3, F-4, and F-5 contain the City’s resources used to support planning activities, including the reports and studies reviewed during the update of this MHMP.

Table F-3. City of Lafayette Legal and Regulatory Resources Available for Hazard Mitigation		
Regulatory Tool	Name	Effect on Hazard Mitigation
Plans	Lafayette Comprehensive Plan	The comprehensive plan for Lafayette reflects the need to plan for future growth in order to assure adequate lands for various land use requirements, adequate levels of public service and that hazard areas and significant resources are protected. The plan also conforms with the requirements of the statewide planning program. The City anticipates application of the Plan goals and policies will enable the City to prioritize economic needs, investigate funding sources, and direct growth in a cost-efficient manner.
	Lafayette Water Master Plan	Defines water usage for the City and potential mitigation options.
	Lafayette Structural Report	Defines structure requirements to ensure personal health and safety.
Programs	National Flood Insurance Program (NFIP)	Makes affordable flood insurance available to homeowners, business owners, and renters in participating communities. In exchange, those communities must adopt and enforce minimum floodplain management regulations to reduce the risk of damage from future floods.
Policies (Municipal Codes)	Title 7 Emergency Organization and Functions	Provides for the preparation and carrying out of plans for the protection of persons and property within the County in the event of an emergency. Describes known hazards.
	Title 8.70 Hazardous Materials Releases	Provides procedure for coordination among various agencies in the event of hazardous materials releases. Describes known hazards.
	Municipal Code	Guides land-use development and transportation requirements. This code consists of all the regulatory and penal ordinances and certain administrative ordinances of the City of Lafayette, Oregon.
	Lafayette Zone Development Ordinance	This Ordinance is enacted to: <ul style="list-style-type: none"> • Implement the goals and policies of the City of Lafayette Comprehensive Land Use Plan • Provide methods of administering and enforcing the provisions of this Ordinance • Promote the public health, safety, and general welfare of the community
	Lafayette Sign Code	The purpose of this Code is to provide equitable rights, reduce conflicts, promote traffic and pedestrian safety, increase the aesthetic value and economic viability of the city, all by classifying and regulating the location, size, type and number of signs and related matters, in a content-neutral manner.
Policies (Municipal Codes)	Address & Zoning Map	Delineates building zones for development and construction regulation.
	Yamhill Water Supply Analysis Report (4/07)	Identifies issues concerning health and safety and provides guidance for mitigating unfavorable water condition.

Table F-4. City of Lafayette Administrative and Technical Resources for Hazard Mitigation	
Staff/Personnel Resources	Department/Division Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	Contract City Engineer-Westech Contract Planner-Mid-Willamette Valley COG
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Contract-Gary Biggs (State Licensed))
Planner(s) or engineer(s) with an understanding of manmade or natural hazards	Contract-Westech
Floodplain Manager	Diane Rinks
Personnel skilled in GIS and/or HAZUS-MH	No
Director of Emergency Services	Diane Rinks
Finance (grant writers, purchasing)	Diane Rinks
Public Information Officers	Diane Rinks

Table F-5. City of Lafayette Financial Resources for Hazard Mitigation	
Financial Resources	Effect on Hazard Mitigation
General funds	Yes-Contingency Funds
Authority to levy taxes for specific purposes	Yes - Only with voter approval
Incur debt through general obligation bonds	Yes- Only with voter approval
Incur debt through special tax and revenue bonds	Yes-City has authority for revenue bonds with limits
Incur debt through private activity bonds	Can incur up to the state limit of debt (cap), based on Charter cannot enter into contract for over 1 million dollars without a vote.
Hazard Mitigation Grant Program (HMGP)	FEMA funding which is available to local communities after a Presidentially-declared disaster. It can be used to fund both pre- and post-disaster mitigation plans and projects.
Pre-Disaster Mitigation (PDM) grant program	FEMA funding which available on an annual basis. This grant can only be used to fund pre-disaster mitigation plans and projects only.
Flood Mitigation Assistance (FMA) grant program	FEMA funding which is available on an annual basis. This grant can be used to mitigate repetitively flooded structures and infrastructure to protect repetitive flood structures.
United States Fire Administration (USFA) Grants	The purpose of these grants is to assist state, regional, national or local organizations to address fire prevention and safety. The primary goal is to reach high-risk target groups including children, seniors and firefighters.
Fire Mitigation Fees	Finance future fire protection facilities and fire capital expenditures required because of new development within Special Districts.

HAZARD IDENTIFICATION AND SCREENING

The following section defines hazard identification as stipulated in DMA 2000 and its implementing regulations.

DMA 2000 Requirements: Risk Assessment: Identifying Hazards

Identifying Hazards

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

Element

- Does the new or updated plan include a description of the types of all natural hazards that affect the jurisdiction?

Source: FEMA, July 2008.

The City of Lafayette’s Steering Committee determined the following hazards could potentially threaten the community. Those hazards identified with an (*) were newly identified by the County as part of the update process – those identified with an (x) were identified as occurring in the City of Lafayette.

Natural Hazards	
Flood	X
Winter Storm	X
Landslide	X
Fire (Wildland/Urban)	X
Earthquake	X
Volcano*	X
Wind	X
Erosion*	
ENSO (El Niño / La Niña)*	
Expansive Soils*	
Drought	
Technological Hazards	
Dam Failure*	
Disruption of Utility and Transportation Systems*	X
Hazardous Materials*	X
Terrorism*	
Infectious Disease Epidemic*	

OVERVIEW OF VULNERABILITY ANALYSIS

This section summarizes community specific vulnerability information for the City of Lafayette to augment the MHMP development process. It comprises:

- Identification of the types and numbers of existing vulnerable buildings, infrastructure, and critical facilities and, if possible, the types and numbers of vulnerable future development.
- Estimate of potential dollar losses to vulnerable structures and the methodology used to prepare the estimate.
- Assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

The following defines vulnerability analysis as stipulated in DMA 2000 and its implementing regulations.

DMA 2000 Requirements: Risk Assessment, Assessing Vulnerability, Overview

Assessing Vulnerability: Overview

Requirement §201.6(c)(2)(ii): [The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.

Element

- Does the new or updated plan include an overall summary description of the jurisdiction's vulnerability to each hazard?
- Does the new or updated plan address the impact of each hazard on the jurisdiction?

Source: FEMA, July 2008.

DMA 2000 Requirements: Risk Assessment, Assessing Vulnerability, Addressing Repetitive Loss Properties

Assessing Vulnerability: Addressing Repetitive Loss Properties

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

Element

- Does the new or updated plan describe vulnerability in terms of the types and numbers of repetitive loss properties located in the identified hazard areas?

DMA 2000 Recommendations: Risk Assessment, Assessing Vulnerability, Identifying Structures

Assessing Vulnerability: Identifying Structures

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.

Element

- Does the new or updated plan describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in the identified hazard areas?
- Does the new or updated plan describe vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities located in the identified hazard areas?

Source: FEMA, July 2008.

The City of Lafayette actively participates in FEMA's National Flood Insurance Program (NFIP) and has implemented floodplain policies, regulations, and ordinances to protect their threatened population and infrastructure to assure NFIP compliance.

The City's Mitigation Strategy identified and analyzed potential flood mitigation actions that would fulfill NFIP initiatives, specifically addressing repetitive loss (RL) properties to assure an effective flood mitigation program.

DMA 2000 Recommendations: Risk Assessment, Assessing Vulnerability, Estimating Potential Losses

Assessing Vulnerability: Estimating Potential Losses

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)(i)(A) of this section and a description of the methodology used to prepare the estimate.

Element

- Does the new or updated plan estimate potential dollar losses to vulnerable structures?
- Does the new or updated plan describe the methodology used to prepare the estimate?

Source: FEMA, July 2008.

DMA 2000 Recommendations: Multi-Jurisdictional Risk Assessment

Assessing Vulnerability: Multi-Jurisdictional Risk Assessment

Requirement §201.6(c)(2)(iii): For multi-jurisdictional plans, the risk assessment must assess each jurisdiction's risks where they vary from the risks facing the entire planning area

Element

- Does the new or updated plan include a risk assessment for each participating jurisdiction as needed to reflect unique or varied risks?

Source: FEMA, July 2008.

VULNERABILITY ANALYSIS

Asset Inventory

The asset inventory delineates each community's existing building and infrastructure assets and insured values and are identified in detail in Table F-7.

Tables F-8, F-9, and F-10 portray the critical infrastructure numbers and values, and their potential vulnerability by hazard type.

The City of Lafayette seeks to protect its population by supporting Yamhill County and Oregon State initiatives, ordinances, building codes, and development regulations. One of the most important initiatives is to prohibit or not allow future development of buildings, infrastructure and critical facilities in identified high hazard areas. Any essential infrastructure component will undergo stringent review to ensure potential hazard risk will be mitigated.

Population and Building Stock

Population data listed in Table F-6A were obtained from the 2000 U.S. Census and Portland State University. It contains census block level data and estimates from university conducted community research.

The City's existing building and infrastructure and insured values are identified in Tables F-6A, F-6B, and F-7.

Table-6A. City of Lafayette Estimated Population and Building Inventory				
Population			Residential Buildings	
2000 Census	Estimated 2005 Census	Estimated 2007 Census³	Total Building Count²	Total Value of Buildings (\$)¹
2,586	3,105	3,730	1200	123,960,000

Source: FEMA HAZUS-MH, Version 2006 and U.S. Census 2000.

¹ Average insured structural value of all residential buildings (including single-family dwellings, mobile homes, etc., is \$125,400 per structure).

² City of Lafayette Utility Building Records

³ Portland State University (PSU) 2007 Oregon Population Report.

Table F-6B. City of Lafayette NFIP Insurance Report								
City of	Total Premiums (\$)	Policies A-Zone	Total Policies	Total Coverage (\$)	Average Premium (\$)	Total Claims Since 1978	Total Paid Since 1978 (\$)	Rep Loss Properties¹
Lafayette	294	0	1	210,000	294.00	0	0	0

Source: FEMA NFIP Insurance Report June 23, 2008

FEMA SQANet.

¹Content and building claims.

Appendix F
City of Lafayette

(Note – many critical facilities and locations have been identified and included in this inventory and risk assessment – due to their confidential nature, their locations have been “shaded” for publication. The data will remain in the report for the County’s future mitigation planning efforts)

Table F-7. City of Lafayette Critical Facilities and Infrastructure

Facility Type	Name / Number	Address	Value ¹
Government and Emergency Response	Lafayette City Hall/ Fire Station/ Court	486 3rd St.	\$1,800,000
	Public Works Shops	260 S. Madison St.	\$300,000
Educational	Little Learners Preschool	344 3rd St.	\$750,000
	Wascher Elementary School	986 7th St Ext.	\$12,000,000
Community	Joel Perkins Park	451 E. 8 th St.	\$100,000
	Commons Park	133 Adams St	\$80,000
	Terry Park	S. Madison St.	\$30,000
	Highlands Park	1015 E. 15 th St.	\$70,000
	Lafayette Community Church	365 3rd St.	\$700,000
	Bible Baptist Church of Lafayette	514 Market St.	\$400,000
	Lafayette Community Center	133 Adams St.	\$100,000
	Yamhill County Historical Museum	605 and 657 Market St.	\$350,000
State and Federal Highways	State Highway 99W	Through town-east to west	1.5 miles; 2 lanes blacktop with curbs
Railroads	Willamette & Pacific Railroad	Through town-east to west	1.5 miles
Bridges	None in City Limits- Access to town provided by Yamhill County Bridge on Lafayette Hwy		\$4,146,000
Transportation Facilities	Lafayette Airstrip		N/A
Utilities	Well #4		\$500,000
	Water Treatment Plant including 4 wells and 3 springs		\$2,000,000
	Wastewater Treatment Plant		\$7,000,000
	4 Lift Stations		\$2,000,000
	City Park Well		\$500,000
	Water Tank (500,000 gal)		\$1,000,000
	Water Distribution System		\$6,600,000
	Sewage Collection System		\$8,700,000

Sources:

FEMA HAZUS-MH, local jurisdictions.

¹Estimated and/or insured structural value for critical facilities and estimated values for critical infrastructure.

NA = Not Available.

Vulnerability Analysis

The vulnerability analysis development process is discussed in the Yamhill County MHMP Section 6. The following Hazard Exposure Analysis Overviews, Tables F-8, F-9, and F-10, were developed by the City of Lafayette Steering Committee. The results are also depicted in the figures located in Appendix K.

Table F-8. City of Lafayette Potential Hazard Exposure Analysis Overview-Population and Buildings

Hazard Type		Hazard Area	Methodology	Population Number	Buildings		
					Residential		Non-Residential
				Number	Value (\$)¹	Number	Value (\$)¹
Flood	Moderate	500-year floodplain	--	--²	--	--	--
	High	100-year floodplain	--	--²	--	--	--
Winter Storm		descriptive	3,730	1,200	123.9M	50	unknown
Landslide	Moderate	14-32 degrees	--	--²	--	--	--
	High	>32 degrees	--	--²	--	--	--
Wildland Fire	Moderate	Moderate fuel rank	--	--²	--	1	300K
	High	High fuel rank	--	--²	--	--	--
	Very High	Very high fuel rank	--	--²	--	--	--
	Extreme	Extreme fuel rank	--	--²	--	--	--
Earthquake	Strong	9-20% (g)	3,730	1,200	123.9M	50	unknown
	Very strong	>20-40% (g)	--	--	--	--	--
	Severe	>40-60% (g)	--	--	--	--	--
Volcano		descriptive	3,730	1,200	123.9M	50	unknown
Wind		descriptive	3,730	1,200	123.9M	50	unknown
Disruption of Utility and Transportation Systems		descriptive	3,730	1,200	123.9M	50	unknown
Hazardous Material Event	1/4-mile buffered transportation routes	1/4-mile buffered transportation routes	450	141	14.5M	50	unknown
	1/4-mile buffered EHS sites	1/4-mile buffered EHS sites	--	--	--	--	--

¹ Average insured structural value of all residential buildings (including single-family dwellings, mobile homes, etc., is \$125,400 per structure). Note-population by parcel was not available at the time this document was prepared. Once this data is available, a useful analysis of population and residential structures by hazard can easily be completed. 0.25-mile buffered EHS sites were calculated due to the use of census block level data.

² The City of Lafayette Steering Committee elected to not use the census block-level data for analysis of residential structures in flood, landslide, and wildland fire hazard areas.

Table F-9. City of Lafayette Potential Hazard Exposure Analysis Overview-Critical Facilities

		Government / Emergency Response		Emergency Response		Educational		Care		Community		
Hazard Type	Hazard Area	Methodology	No.	Value (\$)¹	No.	Value (\$)¹	No.	Value (\$)¹	No.	Value (\$)¹	No.	Value (\$)¹
Flood	Moderate	500-year floodplain	--	--	--	--	--	--	--	--	--	--
	High	100-year floodplain	--	--	--	--	--	--	--	--	--	--
Winter Storm		descriptive	2	2.1M	--	--	2	12.8M	--	--	8	1.8M
Landslide	Moderate	14-32 degrees	--	--	--	--	--	--	--	--	--	--
	High	>32 degrees	--	--	--	--	--	--	--	--	--	--
Wildland Fire	Moderate	Moderate fuel rank	--	--	--	--	--	--	--	--	--	--
	High	High fuel rank	--	--	--	--	--	--	--	--	--	--
	Very High	Very high fuel rank	--	--	--	--	--	--	--	--	--	--
	Extreme	Extreme fuel rank	--	--	--	--	--	--	--	--	--	--
Earthquake	Strong	9-20% (g)	2	2.1M	--	--	2	12.8M	--	--	8	1.8M
	Very strong	>20-40% (g)	--	--	--	--	--	--	--	--	--	--
	Severe	>40-60% (g)	--	--	--	--	--	--	--	--	--	--
Volcano		descriptive	2	2.1M	--	--	2	12.8M	--	--	8	1.8M
Wind		descriptive	2	2.1M	--	--	2	12.8M	--	--	8	1.8M
Disruption of Utility and Transportation Systems		descriptive	--	--	--	--	--	--	--	--	--	--
Hazardous Material Event	1/4-mile buffered transportation routes	1/4-mile buffered transportation routes	1	1.8M	--	--	2	12.8M	--	--	7	1.7M
	1/4-mile buffered EHS sites	1/4-mile buffered EHS sites	--	--	--	--	--	--	--	--	--	--

Table F-10. City of Lafayette Potential Hazard Exposure Analysis Overview-Critical Infrastructure

			Highways		Railroads		Bridges		Transportation Facilities		Utilities		Dams	
Hazard Type	Hazard Area	Methodology	Miles	Value (\$) ¹	Miles	Value (\$) ¹	No.	Value (\$) ¹	No.	Value (\$) ¹	No.	Value (\$) ¹	No.	Value (\$) ¹
Flood	Moderate	500-year floodplain	--	--	--	--	--	--	--	--	1	800K	--	--
	High	100-year floodplain	--	--	--	--	--	--	--	--	--	--	--	--
Winter Storm		descriptive	1.5	unknown	1.5	unknown	1	4.1M	1	unknown	8	28.3M	--	--
Landslide	Moderate	14-32 degrees	--	--	--	--	--	--	--	--	--	--	--	--
	High	>32 degrees	--	--	--	--	--	--	--	--	--	--	--	--
Wildland Fire	Moderate	Moderate fuel rank	--	--	--	--	--	--	--	--	1	2M	--	--
	High	High fuel rank	--	--	--	--	--	--	--	--	--	--	--	--
	Very High	Very high fuel rank	--	--	--	--	--	--	--	--	--	--	--	--
	Extreme	Extreme fuel rank	--	--	--	--	--	--	--	--	--	--	--	--
Earthquake	Strong	9-20% (g)	1.5	unknown	1.5	unknown	1	4.1M	1	unknown	8	28.3M	--	--
	Very strong	>20-40% (g)	--	--	--	--	--	--	--	--	--	--	--	--
	Severe	>40-60% (g)	--	--	--	--	--	--	--	--	--	--	--	--
Volcano		descriptive	1.5	unknown	1.5	unknown	1	4.1M	1	unknown	8	28.3M	--	--
Wind		descriptive	1.5	unknown	1.5	unknown	1	4.1M	1	unknown	8	28.3M	--	--
Disruption of Utility and Transportation Systems		descriptive	--	--	--	--	--	--	--	--	--	--	--	--
Hazardous Material Event	1/4-mile buffered transportation routes	1/4-mile buffered transportation routes	1.5	unknown	1.5	unknown	1	4.1M	--	--	2	7.3M	--	--
	1/4-mile buffered EHS sites	1/4-mile buffered EHS sites	--	--	--	--	--	--	--	--	--	--	--	--

1 – estimated insured values

SUMMARY OF VULNERABILITIES AND IMPACTS TO IDENTIFIED HAZARDS

The following section describes each hazard and the community's vulnerabilities and impacts from natural hazards in addition to technological and manmade hazards identified in the 2009 Yamhill County MHMP.

The following is derived from the best available data for facility locations and values. In many cases, values were unavailable, and therefore the totals listed below should be considered incomplete and likely less than the actual costs associated with the respective hazards.

Flood

FEMA FIRMs were used to outline the 100-year and 500-year floodplains for the City of Lafayette. The 100-year floodplain delineates an area of high risk, while the 500-year floodplain delineates an area of moderate risk.

There is one utility (worth \$800K) located in the 500-year floodplain and therefore accorded a moderate risk.

The City of Lafayette Steering Committee elected to not use the census block-level data for analysis of residential and non-residential structures in flood hazard areas.

Winter Storm

Winter storms have widespread impacts that are most often the result of the ice, cold, high winds and flooding they bring. Damage to facilities and infrastructure can be severe, depending on the intensity of the storm event.

Since winter storms are regional events, the entire City of Lafayette is equally vulnerable. Therefore, 3,730 residents, 1200 residential structures (worth \$124M), 50 non-residential structures (value unknown), two government/emergency response facilities (value \$2.1M), two educational facilities (value \$13M), eight community facilities (value \$1.8M), 1.5 miles of highway and rail (value unknown), one bridge (value \$4.1M), one transportation facility (value unknown), and eight utilities (value \$28.3M) are at risk.

Landslide

The potential impacts from landslides can be widespread. Potential debris flows and landslides can impact transportation and rail routes, utility systems, and water and waste treatment infrastructure along with public, private, and business structures located adjacent to steep slopes, along riverine embankments, or within alluvial fans or natural drainages. Response and recovery efforts will likely vary from minor cleanup to more extensive utility system rebuilding. Utility disruptions are usually local and terrain dependent. Damages may require reestablishing electrical, communication, and gas pipeline connections occurring from specific breakage points. Initial debris clearing from emergency routes and high traffic areas may be required. Water and wastewater utilities may need treatment to quickly improve water quality by reducing excessive water turbidity and reestablishing waste disposal capability.

USGS elevation datasets were used to determine the landslide hazard areas within the City of Lafayette. Risk was assigned based on slope angle. A slope angle less than 14 degrees was assigned a low risk, a slope angle between 14 and 32 degrees was assigned a medium risk, and a slope angle greater than 32 degrees was assigned a high risk.

Using these guidelines, the City of Lafayette has landslide prone areas located along stream banks.

The City of Lafayette Steering Committee elected to not use the census block-level data for analysis of residential and non-residential structures in landslide hazard areas. In addition, GIS analysis results were not used by the Steering Committee to determine critical facilities and infrastructure in hazard areas.

Wildland Fires

Wildland fire hazard areas were identified using a model incorporating slope, aspect, and fuel load. South-facing, steep, and heavily vegetated areas were assigned the highest fuel values while areas with little slope and natural vegetation were assigned the lowest fuel values. Fuel ranks of moderate, high, very high, and extreme were assigned to the entire region based on the results of this modeling.

The City of Lafayette has critical infrastructure located within an area with moderate fuel ranks. The moderate fuel rank area contains one non-residential structures (worth \$300K) and one utility (worth \$2M).

The City of Lafayette Steering Committee elected to not use the census block-level data for analysis of residential structures in the wildland fire hazard area. In addition, GIS analysis results were not used by the Steering Committee to determine critical facilities and infrastructure in hazard areas.

Earthquake

Based on PGA shake maps produced by the USGS, the western portion of Yamhill County is likely to experience higher levels of shaking than the eastern portion, as a result of its proximity to the Cascadia Subduction Zone. Ground movement in both areas is likely to cause damage to weak, unreinforced masonry buildings, and to induce small landslides along unstable slopes. In addition, earthquakes can trigger other hazards such as dam failure and disruption of transportation and utility systems.

The City of Lafayette is in the eastern portion of Yamhill County in a region likely to experience strong shaking should a subduction zone earthquake occur. In contrast, the western portion of the county is likely to experience very strong shaking. This rating represents the peak acceleration of the ground caused by the earthquake, and for a strong designation corresponds to nine to 20 percent of the acceleration of gravity.

The entire City of Lafayette can be equally affected by earthquakes. Therefore, 3,730 residents, 1200 residential structures (worth \$124M), 50 non-residential structures (value unknown), two government/emergency response facilities (value \$2.1M), two educational facilities (value \$13M), eight community facilities (value \$1.8M), 1.5 miles of highway and rail (value

unknown), one bridge (value \$4.1M), one transportation facility (value unknown), and eight utilities (value \$28.3M) are at risk.

Volcano

Ashfall or tephra from volcanic activity is most likely to impact Yamhill County and the City of Lafayette. Damage is likely to result from volcanic eruption columns and clouds containing volcanic gases, minerals, and rock. The ash columns and clouds form rapidly and extend several miles above an eruption. Solid particles within the clouds present a serious aviation threat, and can distribute acid rain as sulfur dioxide gas mixes with water. Because carbon dioxide is heavier than air and collects in valleys and depressions, these ash particles can create a risk of suffocation as threatening human and animals. Fluorine can cling to ash particles, and pose a toxic threat potentially poisoning grazing livestock and contaminating domestic water supplies.

Due to the nature of the hazard, it is impossible to predict the location or extent of future events with any probability. The entire City of Lafayette can be equally affected by volcano ashfall. Therefore, 3,730 residents, 1200 residential structures (worth \$124M), 50 non-residential structures (value unknown), two government/emergency response facilities (value \$2.1M), two educational facilities (value \$13M), eight community facilities (value \$1.8M), 1.5 miles of highway and rail (value unknown), one bridge (value \$4.1M), one transportation facility (value unknown), and eight utilities (value \$28.3M) are at risk.

Wind

Many buildings, utilities and transportation systems in open areas, natural grasslands, or agricultural lands are especially vulnerable to wind damage. Impacts associated with wind can include damage to power lines, trees, and structures, and can also cause temporary disruptions of power. Additionally, high winds can cause significant damage to forestlands.

All areas within the City of Lafayette are equally at risk of a windstorm event. Therefore, 3,730 residents, 1200 residential structures (worth \$124M), 50 non-residential structures (value unknown), two government/emergency response facilities (value \$2.1M), two educational facilities (value \$13M), eight community facilities (value \$1.8M), 1.5 miles of highway and rail (value unknown), one bridge (value \$4.1M), one transportation facility (value unknown), and eight utilities (value \$28.3M) are at risk.

Disruption of Utility and Transportation Systems

Transportation system disruption effects life, health, and safety by limiting emergency vehicle mobility, access to hospitals, access to evacuation routes, and access to vital supplies if transport is seriously disrupted for an extended period. Disruption to transportation systems can also cause economic effects from delays, lost commerce, and lost time. Similarly, disruption of utility systems can affect commerce and recreation and fundamental health and safety in Yamhill County and the City of Lafayette. Countywide and citywide disruptions are likely to impact all residents equally. Structural damage from disruption of utility and transportation systems is not expected; rather the risks apply to residents and those traveling in the area.

Hazardous Material Event

The National Response Center and the EPA's Environmental Facts Multisystem Query were used to locate hazardous waste handling facilities and businesses generating hazardous waste from their activities. Transportation routes, including State Highway 99 West and the Willamette and Pacific Railroad, likely to carry hazardous waste were examined, and all facilities within a 0.25 miles radius of those are considered at risk.

In the City of Lafayette, 450 residents, 141 residential structures (worth \$14.5M), 50 non-residential structures (value unknown), one government/emergency response facility (value \$1.8M), two educational facilities (worth \$12.8M), seven community facilities (worth \$1.7M), 1.5 miles of highway and rail (value unknown), one bridge (worth \$4.1M), and two utilities (worth \$7.3M) are considered at risk.

MITIGATION STRATEGY

IDENTIFYING MITIGATION ACTIONS

The following section defines mitigation action identification and analysis as stipulated in DMA 2000 and its implementing regulations.

DMA 2000 Requirements: Mitigation Strategy - Identification and Analysis of Mitigation Actions

Identification and Analysis 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.

Element

- Does the new or updated plan identify and analyze a comprehensive range of specific mitigation actions and projects for each hazard?
- Do the identified actions and projects address reducing the effects of hazards on new buildings and infrastructure?
- Do the identified actions and projects address reducing the effects of hazards on existing buildings and infrastructure?

Source: FEMA, July 2008.

The Steering Committee assessed whether to adopt Yamhill County's mitigation goals listed in Table F-11, or to revise them to more fully meet the City's needs. The City then proceeded to evaluate potential mitigation actions after finalizing the mitigation goals. Mitigation actions are activities, measures, or projects that help achieve the goals of a mitigation plan. Table F-12 depicts the City's considered mitigation actions developed during this mitigation planning process. The revised list in Table F-14 delineates those actions the City will strive to implement within this five year planning cycle.

DMA 2000 Requirements: Mitigation Strategy - National Flood Insurance Program (NFIP) Compliance

National Flood Insurance Program (NFIP) Compliance

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.

Element

- Does the new or updated plan describe the jurisdiction(s) participation in the NFIP?
- Does the mitigation strategy identify, analyze and prioritize actions related to continued compliance with the NFIP?

Source: FEMA, July 2008.

The City of Lafayette actively participates in FEMA's National Flood Insurance Program (NFIP) and have implemented floodplain policies, regulations, and ordinances to protect their threatened population and infrastructure to assure NFIP compliance.

The City's Mitigation Strategy identified and analyzed potential flood mitigation actions that would fulfill NFIP initiatives, specifically addressing repetitive loss (RL) properties. They subsequently selected and prioritized City appropriate actions to assure an effective flood mitigation program.

MITIGATION GOALS AND ACTION ITEMS CONSIDERED

Table F-11. 2006 Yamhill County Mitigation Goals-Considered	
Goal Number	Goal Description
1	<p>EMERGENCY OPERATIONS <i>Goal Statement:</i> Coordinate natural hazard mitigation activities, where appropriate, with emergency operations plans and procedures and with various other agencies, as appropriate.</p>
2	<p>EDUCATION AND OUTREACH <i>Goal Statement:</i> Develop and implement education and outreach programs to increase public awareness of the risks associated with natural hazards.</p>
3	<p>PARTNERSHIPS <i>Goal Statement:</i> Develop effective partnerships with public and private sector organizations and significant agencies and businesses for future natural hazard mitigation efforts.</p>
4	<p>PREVENTIVE <i>Goal Statements:</i> - Develop and implement activities to protect human life, commerce, and property from natural hazards. - Reduce losses and repetitive damage for chronic hazard events while promoting insurance coverage for catastrophic hazards.</p>
5	<p>NATURAL RESOURCES UTILIZATION <i>Goal Statement:</i> Link natural resources management, land use planning, and watershed planning with natural hazard mitigation activities to protect natural systems and allow them to serve natural hazard mitigation functions.</p>
6	<p>IMPLEMENTATION <i>Goal Statement:</i> Implement strategies to mitigate the effects of natural hazards.</p>

Table F-12. City of Lafayette Mitigation Actions Considered

Hazard	Status	Comment	Description
Natural Hazards			
<i>Multi-Hazard (MH)</i>			
MH	<i>Ongoing</i>		Develop and incorporate building ordinances commensurate with building codes to reflect survivability from wind, seismic, fire, and other hazards to ensure occupant safety.
MH	<i>Ongoing</i>		Review ordinances and develop outreach programs to assure mobile homes and manufactured buildings are protected from severe wind and flood hazards. (Anchoring, elevation, and other methods as applicable)
MH	Consider		Increase power line wire size and incorporate quick disconnects (break away devices) to reduce ice load and wind storm power line failure during severe wind or winter ice storm events.
MH	<i>Ongoing</i>		Purchase and install generators with main power distribution disconnect switches for identified and prioritized critical facilities susceptible to short term power disruption. (i.e. first responder and medical facilities, schools, correctional facilities, and water and sewage pump stations, etc.)
MH	Consider		Install lightning grade surge protection devices on critical electronic components such as warning systems, communications equipment, and computers for critical facilities.
MH	Consider		Retrofit structures to protect them from seismic, floods, high winds, earthquakes, or other natural hazards.
MH	Consider		Identify and pursue funding opportunities to implement mitigation actions.
<i>Flood</i>			
Flood	Consider		Develop and maintain GIS mapped critical facility inventory for all structures located within 100-year and 500-year floodplains.
Flood	<i>Ongoing</i>		Develop, implement, and enforce floodplain management ordinances.
Flood	<i>Ongoing</i>		Develop, or revise, adopt, and enforce storm water ordinances and regulations to manage run-off from new development, including buffers and retention basins.
Flood	<i>Ongoing</i>		Provide flood protection to mitigate damage and contamination of wastewater treatment systems.
<i>Winter Storm</i>			
Winter Storm	<i>Ongoing</i>		Develop and implement programs to coordinate maintenance and mitigation activities to reduce risk to public infrastructure from severe winter storms.
Winter Storm	<i>Ongoing</i>		Develop critical facility list needing emergency back-up power systems, prioritize, seek funding and implement mitigation actions.
Winter Storm	Consider		Implement and enforce the most current Uniform International, and State, Building Codes to ensure structures can withstand winter storm hazards such as high winds, rain, water and snow.
Winter Storm	Consider		Increase power line wire size and incorporate quick disconnects (break away devices) to reduce ice load power line severe wind or winter ice storm event failure.
Winter Storm	<i>Ongoing</i>		Identify, prioritize, and implement infrastructure upgrade or rehabilitation project prioritization and development.

Table F-12. City of Lafayette Mitigation Actions Considered

Hazard	Status	Comment	Description
Landslide			
Landslide	<i>Ongoing</i>		Develop, implement and enforce development restrictions in High Hazard Areas
Wildland Fire			
Wildland Fire	<i>Ongoing</i>		Implement program to maintain fire trails throughout watershed area for access.
Wildland Fire	<i>Ongoing</i>		Reduce underbrush fuel in watershed critical areas.
Wildland Fire	<i>Ongoing</i>		Train and equip fire personnel in wildland fires and familiarize them with the water shed area.
Earthquake (EQ)			
Earthquake	<i>Ongoing</i>		Evaluate critical public facility seismic performance for fire stations, public works buildings, potable water systems, and wastewater systems within the jurisdiction.
Earthquake	Consider		Retrofit or rebuild important public facilities with significant seismic vulnerabilities, such as unreinforced masonry construction.
Earthquake	<i>Ongoing</i>		Implement and enforce the Uniform, International, and State Building Codes.
Earthquake	<i>Ongoing</i>		Inspect and/or certify all new construction.
Volcano			
Volcano	Consider		Update public emergency notification procedures and develop an outreach program for ash fall events.
Volcano	Consider		Evaluate capability of water treatment plants to deal with high turbidity from ash falls, update emergency response plans, and upgrade treatment facilities' physical plant to deal with ash falls. Prioritize and initiate actions to fill capability gaps.
Wind			
Wind	Consider		Identify and prioritize critical facilities' overhead utilities that could be placed underground to reduce power disruption from wind storm / tree blow down damage.
Wind	Consider		Increase power line wire size and incorporate quick disconnects (break away devices) to reduce ice load power line failure during severe wind or winter ice storm events.
Technological and Manmade Hazards			
Disruption of Utility and Transportation Systems (DUTS)			
DUTS	<i>Ongoing</i>		Develop outreach program to educate and encourage residents to maintain several days of emergency supplies for power outages or road closures.
DUTS	<i>Ongoing</i>		Review and update emergency response plans for utility disruptions.
DUTS	<i>Ongoing</i>		Identify and prioritize all "jurisdiction owned" & "non-jurisdiction owned" critical facilities that have backup power and emergency operations plans.
DUTS	<i>Ongoing</i>		Purchase backup power systems for all identified critical facilities.
Hazardous Materials (HAZMAT)			
HAZMAT	Consider		Enhance emergency planning, emergency response training, and equipment acquisition to address hazardous materials incidents for emergency and first responders and public works staff.
HAZMAT	Consider		Train Public Works staff to identify extremely hazardous substances (EHS) and to follow EMS protocols.

EVALUATING AND PRIORITIZING MITIGATION ACTIONS

The following section defines mitigation action evaluation and implementation as stipulated in DMA 2000 and its implementing regulations.

DMA 2000 Requirements: Mitigation Strategy - Implementation of Mitigation Actions

Implementation of Mitigation Actions

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.

Element

- Does the new or updated mitigation strategy include how the actions are prioritized? (For example, is there a discussion of the process and criteria used?)
- Does the new or updated mitigation strategy address how the actions will be implemented and administered, including the responsible department, existing and potential resources, and the timeframe to complete the action?
- Does the new or updated prioritization process include an emphasis on the use of a cost-benefit review to maximize benefits?
- Does the updated plan identify the completed, deleted, or deferred mitigation actions as a benchmark for progress, and if activities are unchanged (i.e., deferred), does the updated plan describe why no changes occurred?

Source: FEMA, July 2008.

The Steering Committee met on September 9, 2008 to evaluate and prioritize each of the mitigation actions to determine which considered actions would be included in the Mitigation Action Plan. During the September 9, 2008 meeting, the Committee determined the responsible agency and potential funding sources. The Mitigation Action Plan represents mitigation projects and programs to be implemented through the cooperation of multiple entities.

To complete this task, the Steering Committee reviewed the Benefit-Cost Analysis Fact Sheet (Appendix P) and prioritized their list by assessing the risks based on actual past damage and focused on items the City of Lafayette can realistically accomplish.

Upon review, the Steering Committee assigned a high priority ranking to actions best fulfilling the goals of the MHMP and are appropriate and feasible for the City of Lafayette and the responsible entities to implement during the five year lifespan of this version of the MHMP. As such, the Steering Committee determined that only the existing and new mitigation actions that received a high priority ranking would be included in the countywide Mitigation Action Plan. Table F-14 depicts the City of Lafayette's mitigation actions grouped by hazard and in descending priority order within each hazard.

MITIGATION GOALS AND ACTIONS PRIORITIZED & ASSIGNED

The City of Lafayette’s reviewed the Yamhill County goals and modified them to better suit the City’s needs and subsequently adopted the Goals in Table F-13 for the current planning period.

Table F-13. City of Lafayette Mitigation Goals	
Goal Number	Goal Description
1	Coordinate natural hazard mitigation activities, where appropriate, with emergency operations plans and procedures and with various other agencies, as appropriate
2	Promote educational and outreach programs to increase public awareness of the risks associated with natural hazards.
3	Maintain effective partnerships with public organizations and significant agencies for future natural hazard mitigation efforts

IMPLEMENTING A MITIGATION ACTION PLAN

The following section defines the mitigation action identification process for each participating jurisdiction as stipulated in DMA 2000 and its implementing regulations.

DMA 2000 Requirements: Mitigation Strategy-Identification of Multi-Jurisdictional Mitigation Actions

Identification of Multi-Jurisdictional Mitigation Actions

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.

Element

- Does the new or updated plan include identifiable action items for each jurisdiction requesting FEMA approval of the plan?
- Does the updated plan identify the completed, deleted or deferred mitigation actions as a benchmark for progress, and if activities are unchanged (i.e., deferred), does the updated plan describe why no changes occurred?

Source: FEMA, July 2008.

Table F-14 displays the City of Lafayette’s Mitigation Action Plan matrix that describes how the mitigation actions were prioritized, how the overall benefit-costs were taken into consideration, and how each mitigation action will be implemented and administered by the Steering Committee and the applicable responsible entity.

Table F-14. City of Lafayette Mitigation Action Plan Matrix						
Hazard	Description	Managing Department / Agency	Timeframe	Potential Funding Source(s)	Benefit-Costs / Technical Feasibility	Comments
Natural Hazards						
<i>Multi-Hazard (MH)</i>						
MH	Purchase and install generators with main power distribution disconnect switches for identified and prioritized critical facilities susceptible to short term power disruption. (i.e. first responder and medical facilities, schools, correctional facilities, and water and sewage pump stations, etc.)	Public Works Foreman, City Engineer	Ongoing	General Funds, Utility Revenue	BC: TBD TF: Yes	
<i>Flood</i>						
Flood	Provide flood protection to mitigate damage and contamination of wastewater treatment systems.	Treatment Plant Operator	Ongoing	Sewer User Fees	BC: TBD TF: Unknown	
<i>Winter Storm</i>						
Winter Storm	Identify and prioritize critical facilities' overhead utilities that could be placed underground to reduce power disruption from wind storm / tree blow down damage, and supply backup power generation.	Public Works Foreman / City Engineer	Ongoing	General Funds, Utility Revenue	BC: TBD TF: Yes	
<i>Landslide</i>						
Landslide	Develop, implement and enforce development restrictions in High Hazard Areas	City Administrator	Ongoing	General Fund	BC: TBD TF: Yes	
<i>Wildland Fire (WF)</i>						
Wildland Fire	Identify and prioritize critical facilities' overhead utilities that could be placed underground to reduce power disruption from wind storm / tree blow down damage, and supply backup power generation.	Fire Chief	Ongoing	Water User Fees	BC: TBD TF: Yes	

Table F-14. City of Lafayette Mitigation Action Plan Matrix

Hazard	Description	Managing Department / Agency	Timeframe	Potential Funding Source(s)	Benefit-Costs / Technical Feasibility	Comments
<i>Earthquake (EQ)</i>						
EQ	Retrofit or rebuild important public facilities with significant seismic vulnerabilities, such as unreinforced masonry construction.	City Administrator	Ongoing	General Funds, Utility Revenue	BC: TBD TF: Yes	
<i>Volcano</i>						
Volcano	Evaluate capability of treatment plants to deal with high turbidity from ash falls, update emergency response plans, and upgrade treatment facilities' physical plant to deal with ash falls. Prioritize and initiate actions to fill capability gaps.	Public Works Foreman / Sewer Treatment Plant Operator	Consider	Water & Sewer User Fees	BC: TBD TF: Yes	
<i>Wind</i>						
Wind	Identify and prioritize critical facilities' overhead utilities that could be placed underground to reduce power disruption from wind storm / tree blow down damage, and supply backup power generation.	Public Works Foreman / City Engineer	Ongoing	General Funds, Utility Revenue	BC: TBD TF: Yes	
Technological and Manmade Hazards						
<i>Disruption of Utility and Transportation Systems (DUTS)</i>						
DUTS	Purchase backup power systems for all identified critical facilities.	City Administrator	Ongoing	General Funds, Utility Revenue	BC: TBD TF: Yes	
<i>Hazardous Materials (HAZMAT)</i>						
HAZMAT	Enhance emergency planning, emergency response training, and equipment acquisition to address hazardous materials incidents for emergency and first responders and public works staff.	Fire Chief	Ongoing	General Funds, Utility Revenue	BC: TBD TF: Yes	