

# Volume III: City Addenda

## Lyons

### Section 1:

#### Overview

Lyons developed this addendum to the Linn County Natural Hazards Mitigation Plan (NHMP) in an effort to increase the community's resilience to natural hazards. The addendum focuses on the natural hazards that could affect the City of Lyons, Oregon, which include drought, flood, earthquake, landslide, volcano, wildfire, windstorm, and severe winter storm. It is impossible to predict exactly when disasters may occur, or the extent to which they will affect the City. 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.

The addendum provides a set of actions that aim to reduce the risks posed by natural hazards through education and outreach programs, the development of partnerships, and the implementation of preventative activities such as infrastructure enhancements, continued compliance with existing programs, updating existing hazard assessment information, and carrying out proposed mitigation activities located in related City of Lyons planning documents. The actions described in the addendum are intended to be implemented through existing plans and programs within the City.

The addendum is comprised of the following sections: 1) Addendum Development Process; 2) Community Profile; 3) Risk Assessment; 4) Mission, Goals, and Actions; and 5) Plan Implementation and Maintenance.

# Addendum Development Process

In the fall of 2006, the Oregon Partnership for Disaster Resilience (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 began in the winter of 2009.<sup>1</sup> The Partnership facilitated and documented the cities' planning processes.

Representatives from the following organizations served as steering committee members for the City of Lyons' natural hazard mitigation planning process.

- Michael Lucas - Mayor
- Lon Conner - City Council
- Kim Hunn - Planning Commission
- Micki Valentine - Lyons Rural Fire District
- Kyle Freres - Freres Lumber
- Bill Grimes - Lyons/Mehama Water District
- Mary Mitchell - City Manager
- Audrey McNerney - Assistant City Manager
- Steve Baldwin - Lyons Planning Commission
- Clastine Ritchie - Lyons Planning/Parks and Recreation Commissioner
- Gary Rychard - North Santiam School District

The planning process and associated resources used to create Lyons' Addendum to the Linn County Natural Hazard Mitigation Plan were developed by OPDR. The planning process was designed to: (1) result in an addendum that is 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 following is a summary of major activities included in the planning process.

## Project Kickoff/Risk Assessment (July 22, 2010)

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<sup>1</sup> Natural Hazards Mitigation Plan Development Support: PDMC-PL-10-OR-2007-009

On July 22<sup>nd</sup> 2010, OPDR conducted a kickoff meeting in Lyons with the steering committee members. The purpose of the meeting was to: 1) provide an overview of the Pre-Disaster Mitigation Program and the Oregon Partnership for Disaster Resilience; 2) describe the four-phase mitigation process and schedule of meeting dates to occur; and 3) identify hazards relevant to Lyons, update hazard history, and conduct a risk assessment. The risk assessment portion of the meeting involved identifying and discussing previous natural hazard events in Lyons and discussing the City's vulnerabilities to natural hazards. OPDR facilitated and documented discussions with the steering committee, and subsequently developed Section 3 below for the City of Lyons. Work session materials and sign-in sheets for the July 22<sup>nd</sup> meeting are located in Appendix A. Following the meeting, the steering committee was asked to review and edit the community profile section of their City addendum.

#### Action Item Development/Plan Implementation and Maintenance (August 26, 2010)

On August 26<sup>th</sup> 2010, OPDR facilitated a risk assessment training/work session with the Lyons steering committee. The work session was developed and implemented by OPDR. The purpose of the work session was to: 1) identify missions and goals for Lyons's addendum; 2) select and develop mitigation action items; and 3) develop a plan implementation process and maintenance strategy. With guidance and facilitative assistance from OPDR, the steering committee identified missions, goals, objectives, mitigation actions, and plan 'conveners' and 'coordinating bodies.' Additionally, the committee established a plan maintenance schedule, and strategies for continuing public involvement throughout the five-year plan implementation and maintenance cycle. Finally, the committee identified opportunities or strategies for: 1) implementing mitigation actions via existing plans and policies; and 2) incorporating mitigation-related activities and responsibilities into City employees' work plans or job descriptions. Through facilitating and documenting discussions with the Lyons steering committee, OPDR subsequently developed Sections 4 and 5 of the Lyons NHMP. Work session materials and sign-in sheets for the August 26<sup>th</sup> meeting are located in Appendix A.

## **Public Involvement**

The county solicited and encouraged public and agency participation at each planning meeting. To increase public awareness and participation, the county sent press releases to the local newspapers serving Linn County residents, conducted a household preparedness survey and a stakeholder survey.

In 2010, the county established a list of 112 stakeholders and interested parties. The stakeholder list included representatives from state and other governmental agencies; each incorporated city in the county; the special taxing districts, including education, public safety and water districts; county department heads; private utility companies; other interested

private businesses; various citizen groups and clubs; and other interested private citizens. The individuals identified on the stakeholder list were invited to participate in the steering committee meetings and were sent a short survey soliciting information on their experiences and understanding of natural hazards in Linn County; the effectiveness of current mitigation activities; and recommendations for future hazard mitigation policies and activities.

The public outreach activities conducted by the county were further supplemented by the city's outreach process of requesting public feedback on Lyons' draft addendum. Before opening the plan up to the public, the city's steering committee served as the primary plan reviewers. Upon completion of a final draft addendum, the city informed residents about the plan, and requested feedback using the following methods:

Posted on city website: The City of Lyons posted the draft addendum on the City website, soliciting comments from the public and providing information on how to submit comments on the draft.

Press release: The City of Lyons provided public notice through a press release soliciting comments on the draft addendum, along with the location of the plan on the City's website, contact information, and the date and time to submit comments.

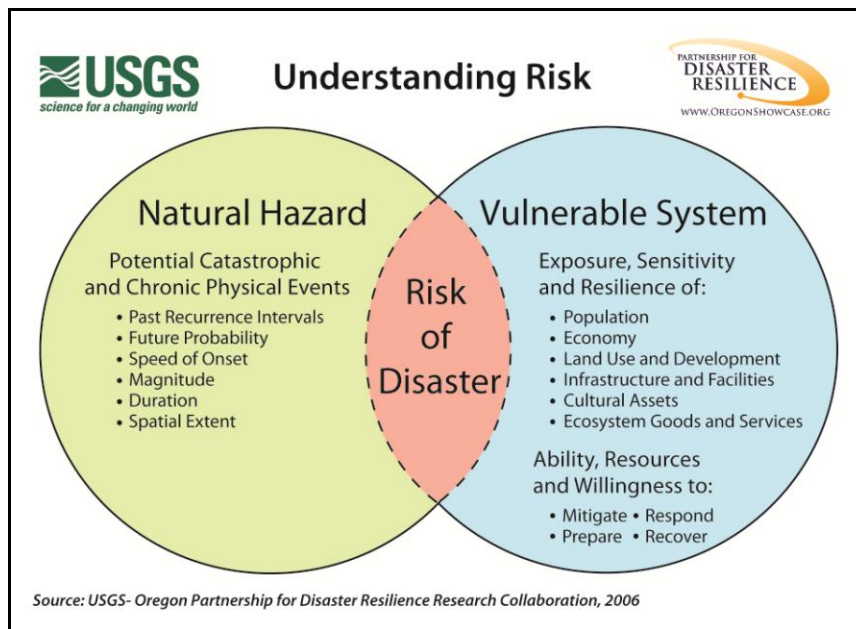
Linn County's project webpage located on OPDR's website (opdr.uoregon.edu) served as an outreach tool to the community during the addendum's development. The final adopted and approved addendum will be posted on the University of Oregon Libraries' Scholar's Bank Digital Archive.

The City of Lyons adopted the addendum to the Linn County Natural Hazard Mitigation Plan via resolution on\_\_\_\_\_.

# Section 2: Community Profile

The following section describes the City of Lyons from a number of perspectives in order to help define and understand the City's sensitivity and resilience to natural hazards. Sensitivity factors can be defined as those community assets and characteristics that may be impacted by natural hazards, (e.g., special populations, economic factors, and historic and cultural resources). Community resilience factors can be defined as the community's ability to manage risk and adapt to hazard event impacts (e.g., governmental structure, agency missions and directives, and plans, policies, and programs). The information in this section represents a snapshot in time of the current sensitivity and resilience factors in the City when the plan was developed. The information documented here, along with the risk assessments located below, should be used as the local level rationale for the risk reduction actions identified at the end of this addendum. The identification of actions that reduce the City's sensitivity and increase its resilience assist in reducing overall risk, or the area of overlap in Figure 1 below.

**Figure 1. Understanding Risk**



## Geography & Climate

Lyons is located in the western foothills of the Cascade Mountain Range within the Willamette Valley, on the northern border of Linn County Oregon, approximately 23 miles southeast of Salem. Lyons has an average

elevation of 659 feet.<sup>1</sup> Lyons experiences a moderate climate. In August, the average high temperature is 80 degrees and the average low temperature is 49 degrees. Wintertime temperatures in January range from an average high of 46 degrees, and an average low of 32 degrees. Lyons receives an average annual precipitation of 56.96 inches.<sup>2</sup> The North Santiam River runs along the northern boundary of Lyons. Several small ponds are surrounded by county and municipal parkland near the eastern edge of town. Trask Creek collects drainage from the southern hills along the south edge of the City. Lyons is located on mostly flat land, with elevations increasing slightly on the south side of town, with ridges surrounding Lyons to the south, and northeast. Across the river to the north is the unincorporated community of Mehama, located on the north bank of the North Santiam River. The landscape surrounding the City consists of farmland in level areas, and forestland on surrounding slopes.

## Population & Demographics

Lyons has grown over the past 20 years as shown in Table 1 below. From 1990 to 2000, the City grew by 8%, and has continued to grow to 1,135 residents in 2009.

**Table 1. Lyons Population Change, 1990-2009**

<u>Year</u>	<u>Population</u>	<u>% Change</u>
1990	938	-
2000	1008	8%
2009	1135	13%

Source: Portland State University, Population Research Center<sup>3</sup>

Disaster impacts (in terms of loss and ability to recover) vary among population groups following a disaster. Historically, 80% of the disaster burden falls on the public. Of this number, a disproportionate burden is placed upon special needs groups, especially children, the elderly, the disabled, minorities, and low income persons. Table 2 shows that 11.4% of the population was living below the federal poverty level in 2000. Table 3 shows that 12.8% of the population is 65 years of age or older.

Additionally, 26% of the disabled population is 65 years or older.<sup>4</sup> Elderly individuals require special consideration due to their sensitivities to heat and cold, their reliance upon public transportation for medications, and their comparative difficulty in making home modifications that reduce risk to hazards.

**Table 2. City of Lyons Poverty Status, 2000**

<u>Type</u>	<u># of People</u>	<u>% of Population</u>
Families	26	9.3%
Individuals	115	11.4%

Source: U.S. Census Bureau, 2000<sup>5</sup>

**Table 3. City of Lyons Population by Age 2000**

<b>Age Range</b>	<b>Total Persons</b>	<b>% of Population</b>
Under 5 Years	70	6.9%
5-19 Years	216	21.4%
20-44 Years	307	30.5%
45-64 Years	286	28.4%
65+ Years	129	12.8%

Source: U.S. Census Bureau, 2000<sup>6</sup>

## **Employment & Economics**

Today, Lyons' economy is centered on manufacturing and education, health and social services, as well as construction and public administration. Manufacturing is the largest industry with 21.6%. There are eight manufacturing companies in and around Lyons.<sup>7</sup> Table 4 shows the number of all persons working in each major industry as of the 2000 census. Forestry products are still prominent in the Lyons area with two large lumber companies in the area; Freres Lumber, located on the south side of town, and Frank Lumber Company located near Mill City. Lyons also serves as a bedroom community for major employers in the surrounding area. These employers include; Linn Benton Community College, Lebanon Community Hospital, Georgia Pacific Corps, Samaritan Albany General Hospital, Wah Chang, Santiam Towing and Recovery, and the Target Distribution Center of Albany.<sup>8</sup> Over half of the employed population that does not work from home has a 15 - 45 minute daily commute to work.<sup>9</sup>

**Table 4. City of Lyons Employment by Major Industry, 2000**

<b>Industry</b>	<b>Total # of Persons Employed</b>	<b>% of Population</b>
Manufacturing	95	21.6%
Educational, health and social services:	83	18.9%
Construction	53	12.1%
Public administration	41	9.3%
Retail trade	34	7.7%
Transportation and warehousing, and utilities:	26	5.9%
Arts, entertainment, recreation, accommodation and food services:	21	4.8%
Professional, scientific, management, administrative, and waste management services:	20	4.6%
Other services (except public administration)	17	3.9%
Agriculture, forestry, fishing and hunting, and mining:	16	3.7%
Finance, insurance, real estate and rental and leasing:	16	3.7%
Wholesale trade	12	2.7%
Information	5	1.1%
<b>Civilian Employed Population 16 Years and Older</b>	<b>439</b>	<b>100.0%</b>

Source: Source: U.S. Census Bureau, 2000<sup>10</sup>

Median income can be used as an indicator of the strength of the region's economic stability. In 1999, the median household income in Lyons was \$40,368. This is \$1,626 below the 2000 national median household income of \$41,994, and \$2850 above the \$37,518 median household income for Linn County.<sup>11</sup> Although it can be used to compare areas as a whole, this number does not reflect how income is divided among area residents.

## Housing

Housing type and year-built dates are important factors in mitigation planning. Certain housing types tend to be less disaster resistant and warrant special attention: mobile homes, for example, are generally more prone to wind and water damage than standard stick-built homes. Generally the older the home is, the greater the risk of damage from natural disasters. This is because stricter building codes have been developed following improved scientific understanding of plate tectonics and earthquake risk. For example, structures built after the late 1960s in the Northwest and California use earthquake resistant designs and construction techniques. In addition, FEMA began assisting communities with floodplain mapping during the 1970s, and communities developed ordinances that required homes in the floodplain to be elevated to one foot above Base Flood Elevation.

In 2000, Lyons had 395 housing units. Of those, 94% were occupied (372), and 6% were vacant (23). Of the occupied housing units 79% (295) were owner occupied, and 21% (75) were renter occupied.<sup>12</sup> Studies have shown



that renters are less likely than homeowners to prepare for catastrophic events. Renters tend to have higher turnover rates that may limit their exposure to hazard information. Likewise, preparedness campaigns tend to pay less attention to renters. Renters typically have lower incomes and fewer resources to prepare for natural disasters, and renters may lack the motivation to invest in mitigation measures for rented property.

Lyons also has a large number of older housing structures that may be vulnerable to earthquakes. Table 5 shows that approximately 82.4% of the housing units were built before 1994 when more stringent seismic codes were put into place.

**Table 5. City of Lyons Housing Structure Age**

<b>Year Built</b>	<b>Total Structures</b>	<b>% of Structures</b>
Built 1999 to March 2000	9	2.3%
Built 1995 to 1998	47	12%
Built 1990 to 1994	13	3.3%
Built 1980 to 1989	41	10.5%
Built 1970 to 1979	113	28.9%
Built 1960 to 1969	48	12.3%
Built 1950 to 1959	31	7.9%
Built 1940 to 1949	61	15.6%
Built 1939 or earlier	28	7.2%
<b>Total Housing Units</b>	<b>391</b>	<b>100%</b>

Source: U.S. Census 2000<sup>13</sup>

**Table 6. City of Lyons Housing Type, 2000**

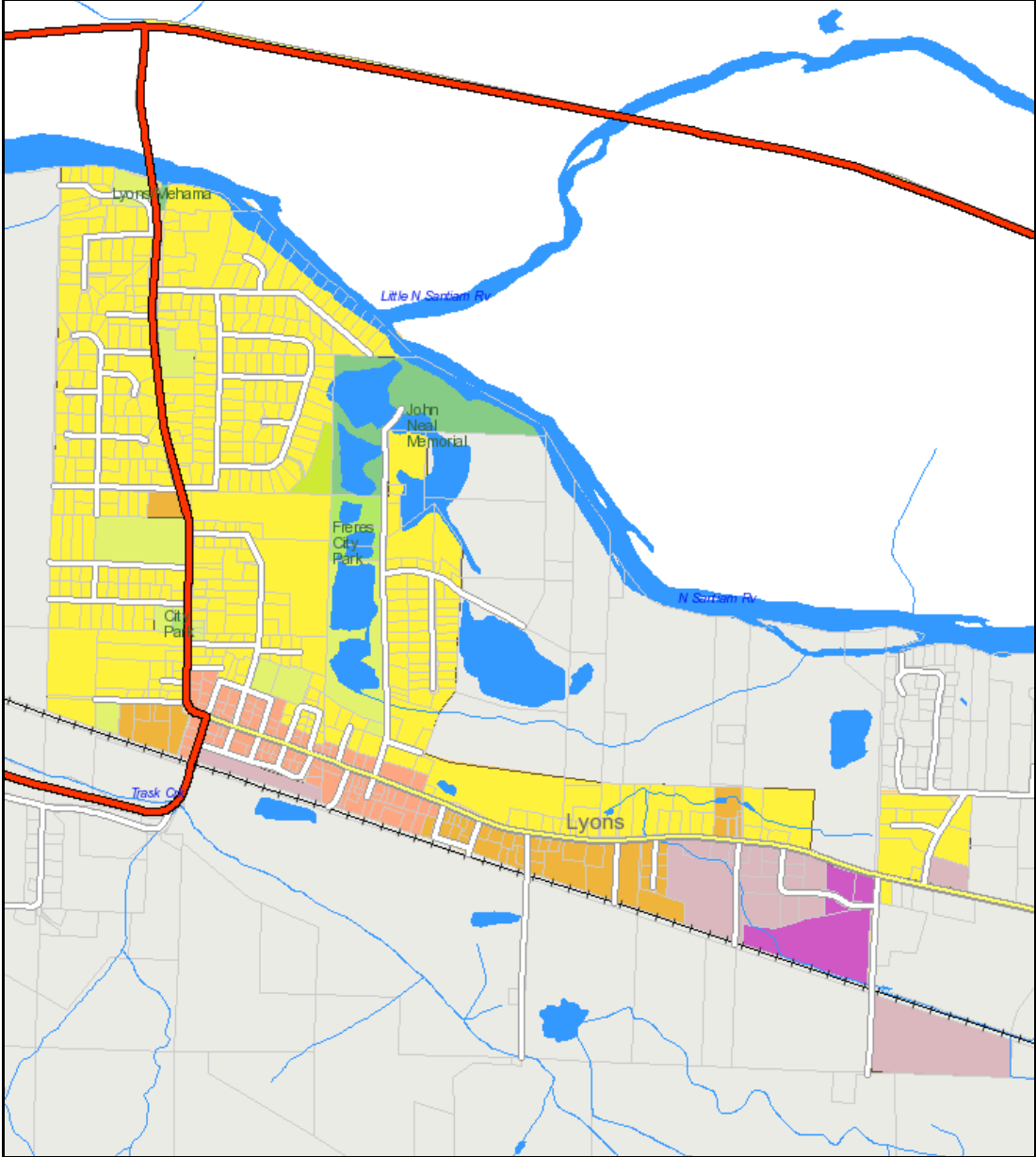
<b>Housing Type</b>	<b>Total Structures</b>	<b>% of Structures</b>
Single-Family unit	299	76.5%
Multi-Family 2 units	12	3.1%
Multi Family 3 or 4 units	5	1.3%
Multi Family 5 to 20 units	6	1.5%
10 to 19 units	0	0%
Mobile home	69	17.6%
Boat, RV, van, etc.	0	0%
<b>Total Housing Units</b>	<b>391</b>	<b>100%</b>

Source: U.S. Census 2000<sup>14</sup>

## Land Use & Development

As of 2009, the City of Lyons contains 550 acres of land within the City limits.<sup>15</sup> Within the City limits, land is zoned Single Family and Multi-Family Residential, Commercial, General and Limited Industrial, and Open Land/Public. See Figure 2 below, Lyons Zoning Map.

Figure 2. City of Lyons Zoning Map



- Lyons Zoning
- C - Commercial
  - GI - General Industrial
  - LI - Limited Industrial
  - OLP - Open Land / Public
  - SFR - Single-Family Residential
  - MFR - Multi-Family Residential

Source: Linn County ELLA Maps 2.0. 2010



Presently, there is little capacity for growth. The steering committee indicated that infill is the only likely source of future growth in Lyons. The existing Lyons subdivisions are the most likely locations for future residential growth. The steering committee also stated that expanding the UGB to accommodate future development may be problematic due to the ½ acre minimum lot size and the desire of the Oregon Land Conservation and Development Commission (LCDC) and the Department of Land Conservation and Development (DLCD) to encourage infilling of existing acreage.

## Transportation

Main transportation corridors to and from Lyons include Highway 226, which connects with Highway 20 to provide the main access to and from Albany, located to the southwest. Highway 22 to the north provides east/west access to and from Stayton to the west, and Salem to the northwest. Highways 22 and 226 provide connectivity to I-5. Highway 226 intersects with Highway 22 just north of Lyons, in Mehama, located on the north bank of the North Santiam River. East Lyons Mill City Drive diverges from Highway 226 in downtown Lyons, and provides an additional east/west connection to Mill City, located 8 miles to the east. The North Santiam River Bridge between Lyons and Mehama forms the only connection between the two communities. Without an operational bridge, Lyons would have no access to Mehama, or Highway 22.

Albany and Eastern Railroad Company (AERC) owns and operates the Mill City District railroad line, a railway that runs from Mill City to Lebanon and which forms the southern boundary of Lyons. This railroad provides railroad transport to industrial sites in Lebanon and Albany, OR.<sup>16</sup>

The Chemeketa Area Regional Transportation System (CARTS) is the public transit provider for Marion and Polk Counties, and specified communities of Linn County. The CART Canyon Connector Route has stops at both the Lyons Fire Station and City Hall, and provides transportation to and from Salem, Stayton, Mill City, and Gates.

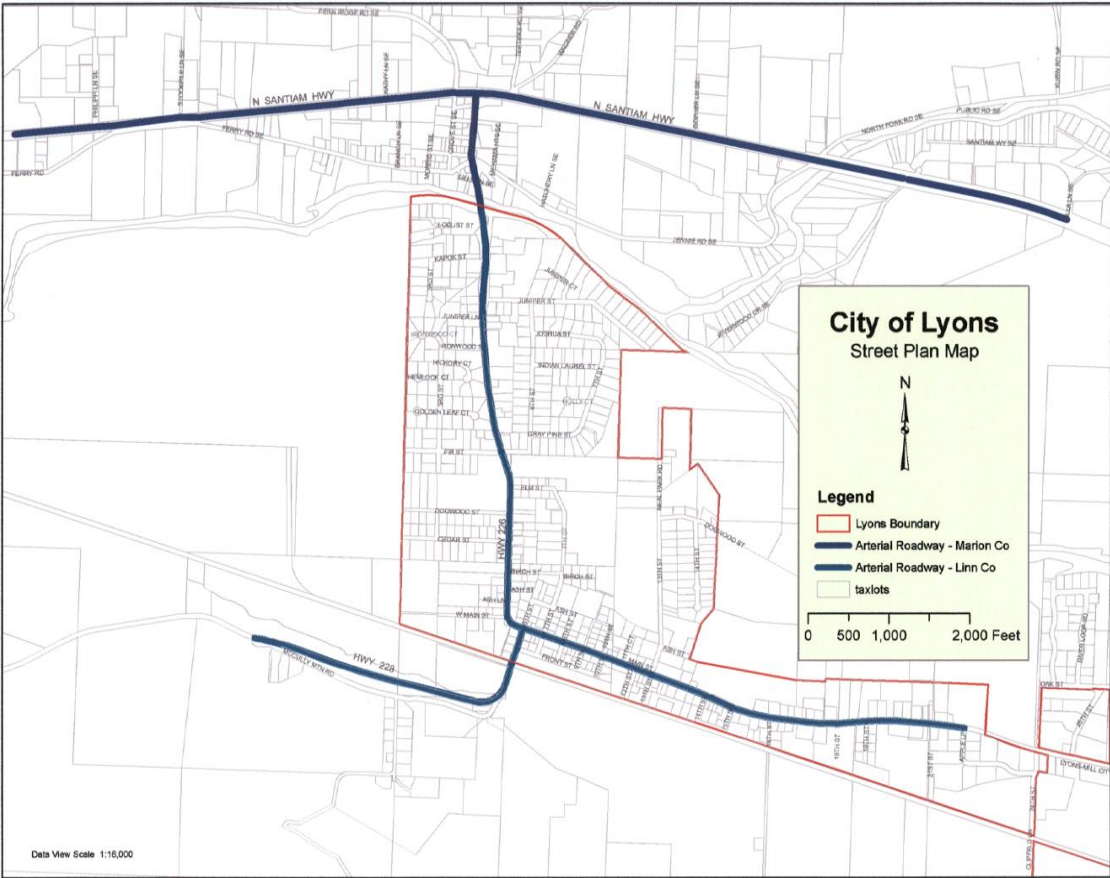
Transportation is also an important consideration when planning for emergency service provisions. Growth within the City will put pressure on both major and minor roads, especially if the main mode of travel is by single occupancy vehicles. How people travel to work is indicative of the prevalence of single occupancy vehicle travel, and can help predict the amount of traffic congestion and the potential for accidents. Table 7 below represents the different methods Lyons residents use to travel to work. Figure 3 on the next page shows the major transportation networks that run through Lyons.

**Table 7. Transportation Mode Used to Commute to Work, Lyons, 2000.**

<b>Method of Commuting</b>	<b>Number of Residents</b>	<b>% of Residents</b>
Car, truck, or van -- driven alone	317	73.4%
Car, truck, or van -- carpoled	61	14.1%
Walked	19	4.4%
Other means	8	1.9%
Worked at home	27	6.3%
Public transportation (including taxicab)	0	0%
<b>Mean travel time to work (minutes)</b>	<b>27.9</b>	

Source: U.S. Census 2000.<sup>17</sup>

Figure 3. City of Lyons Transportation Map





## Critical Facilities & Infrastructure

Critical facilities are those that support government and first responders' ability to take action in an emergency. They are a top priority in any comprehensive hazard mitigation plan. Individual communities should inventory their critical facilities to include locally designated shelters and other essential assets, such as fire stations, and water and waste treatment facilities.

Lyons has a number of critical facilities that provide services to City residents. Lyons City Hall, located at 449 5<sup>th</sup> Street, is the base for City administrative tasks, the location of city resources, and provides meeting space for City functions. The Lyons Post Office is located at the intersection of 5<sup>th</sup> and Ironwood Streets. Lyons Rural Fire District Station 550 is located on 10<sup>th</sup> and Main, just north of the Freres Lumberyard. The nearest hospital is the Santiam Memorial Hospital in Stayton. This hospital has 40 beds, and provides medical services for approximately 30,000 people in Stayton and surrounding communities, including Lyons.

Located across from Elm Street off of 5<sup>th</sup>, is Mari-Linn Elementary School. Mari-Linn is one of five public schools included in the North Santiam School District, and the only one located in Lyons. Mari-Linn is a K-8 school that serves the communities of Lyons and Mehama. It has an approximate enrollment of 210 students.<sup>18</sup>

Lyons also contains critical infrastructure facilities. The Lyons-Mehama Water District Shop is located west of the foot of the 5<sup>th</sup> Street Bridge on Locust Street, adjacent to the boat launching area. Daily water operations are conducted out of this building.

## Historical & Cultural Resources

Historical and cultural resources such as historic structures and landmarks can help to define a community and may also be sources of tourism dollars. Because of their role in defining and supporting the community, protecting these resources from the impact of disasters is important.

Historic places contain special significance for Lyons. Some of the historic buildings of Lyons listed in the Oregon Historic Sites Database include; the former St. Patrick's Catholic Church located on 7<sup>th</sup> Street, the Corvallis and Eastern Railroad Depot located at 60 Front Street, and the Lyons School on Birch Street.<sup>19</sup>

Some significant cultural resources of Lyons include the Lyons Public Library, located at 279 8<sup>th</sup> Street. There are two active churches in Lyons; the Santiam Chapel Assembly of God, and the Canyon Baptist Church. The various parks located within Lyons, and in surrounding areas are also of cultural significance. These parks include; the North Santiam State Park located northeast of Lyons, Freres City Park, Taylor Park, and the John Neil County Park, which includes a boat ramp for river access.



The Fox Valley Cemetery is located approximately two miles east of Lyons and has been in use since 1854.

## Government Structure

The City of Lyons operates under a Council-Manager form of government. The City Council consists of a mayor and four elected councilors. On planning issues, City Council is advised by a five member Planning Commission.

The City Manager is the administrative head of City government and is appointed by City Council. Working under the City Manager is an Assistant City Manager. The City Manager and Assistant City Manager are primarily responsible for overseeing the efficient management and operation of City departments, personnel, and resources. They may influence hazard mitigation efforts through overseeing the implementation and maintenance of the Natural Hazard Mitigation Plan.

Lyons has a five member budget committee that is responsible for coordinating the preparation of the City budget. The City Planning Commission convenes monthly, or as needed. Lyons has three library employees and a five member library board.

Members of City Council and the Planning Commission fulfill the Lyons commissionerships and liaisons. The commissionerships and liaison positions consist of the following;

- Cemetery Commissioner
- Transportation Commissioner
- Parks and Recreation Commissioner
- Building Improvements Commissioner
- Linn County Sheriff's Department Liaison
- Library Commissioner
- North Santiam School District Liaison
- Lyons Rural Fire District Liaison
- Lyons/Mehama Water District Liaison
- Community Relations Liaison

The City of Lyons Public Works and Maintenance is responsible for maintenance of City grounds, properties, and the right of way of City streets. This relates to natural hazards through staff's recognition of potential threats to property and safety, and actions taken to reduce this risk.<sup>20</sup>

## Existing Plan & Policies

Communities often have existing plans and policies that guide and influence land use, land development, and population growth. Such existing plans and policies can include comprehensive plans, zoning ordinances, and technical reports or studies. Plans and policies already in

existence have support from local residents, businesses and policy makers. Many land-use, comprehensive, and strategic plans are updated regularly, and can adapt easily to changing conditions and needs.<sup>21</sup>

The Lyons' Addendum to the Linn County Natural Hazard Mitigation Plan includes a range of recommended action items that, when implemented, will reduce the City's vulnerability to natural hazards. Many of these recommendations are consistent with the goals and objectives of the City's existing plans and policies. Linking existing plans and policies to the Natural Hazards Mitigation Plan helps identify what resources already exist that can be used to implement the action items identified in the plan. Implementing the natural hazards mitigation plan's action items through existing plans and policies increases their likelihood of being supported and getting updated, and maximizes the City's resources.

Table 8 documents the plans and policies already in place in Lyons.

**Table 8. Lyons Existing Plans**

Name	Date of Last Revision	Author/ Owner	Description	Relation to Natural Hazard Mitigation
Lyons Comprehensive Plan	Revised August 2002 Revision Scheduled for 2011	City of Lyons	Establishes the City's authority to plan for and deal with issues related to the future development of Lyons.	Explains the flood, steep slope, landslide hazards found Lyons. Provides policy guidelines for future development and land use in the City. Policies and implementation actions addressing natural hazards and Goal 7 in the Comprehensive Plan can be linked with natural hazard action items.
Lyons Municipal Code	Revised April 2010	City of Lyons	Guide for daily operation of the City, for the preservation of the public peace, safety and general welfare of the City.	Designate, regulate, and restrict the development and use of buildings in unsafe areas. Provide for all economic and social segments of the community. Promote and protect the public health, safety, general welfare, and economic viability of the community.
Community Strategic Plan	2001	City of Lyons	A Strategic Plan identifies community goals, and lays out steps required to meet those goals.	Strategic planning is essential for setting community priorities, and lays out actions needed to reach the desired outcomes, such as; increased public safety, wellness, and community resilience through natural hazard mitigation planning.
Lyons Buildable Land Studies	2003	City of Lyons	Analysis of all land within the City to inventory available land for residential or commercial development	Buildable land studies include analysis of land that is not available for development due to natural features, or susceptibility to natural hazards. Examples include areas in floodplains or wetlands, or on steep slopes.
County Emergency Operations Plan		Linn County	The plan provides a framework for a coordinated response and recovery during any type or size of emergency.	While the EOP deals primarily with emergency response and recovery, mitigation actions should be coordinated and/or integrated within the recovery strategy to reduce the future impacts of hazard events.
National Flood Insurance Program	July 2010	FEMA	The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP.	Participation in the National Flood Insurance Program makes federally backed flood insurance available for eligible buildings. Provides information to individuals living in floodplains to raise awareness of risks and flood mitigating practice.
Linn County Community Wildfire Protection Plan	November 2007	ECO Northwest /Linn County	Describes Linn County's risk from wildfires as well as the specific steps that it will take to reduce that risk now and in the future.	Intended to assist Linn County in reducing its risk from wildfire hazards by identifying resources, information, and strategies for risk reduction. Help to guide and coordinate mitigation activities throughout the County.

# Community Organizations and Programs

Social systems can be defined as community organizations and programs that provide social and community-based services, such as health care or housing assistance, to the public. In planning for natural hazard mitigation, it is important to know what social systems exist within the community because of their existing connections to the public. Often, actions identified by the plan involve communicating with the public or specific subgroups within the population (e.g. elderly, children, low income). The City can use existing social systems as resources for implementing such communication-related activities because these service providers already work directly with the public on a number of issues, one of which could be natural hazard preparedness and mitigation.

The following organizations are active within the community and may be potential partners for implementing mitigation actions. The list includes information on each organization or program's service area, types of services offered, populations served, and how the organization or program could be involved in natural hazard mitigation. The three involvement methods are defined below.

- Education and outreach – organization could partner with the community to educate the public or provide outreach assistance on natural hazard preparedness and mitigation.
- Information dissemination – organizations could partner with the community to provide hazard-related information to target audiences.
- Plan/project implementation – organization may have plans and/or policies that may be used to implement mitigation activities or the organization could serve as the coordinating or partner organization to implement mitigation actions.

**Table 9. Lyons Community Organizations**

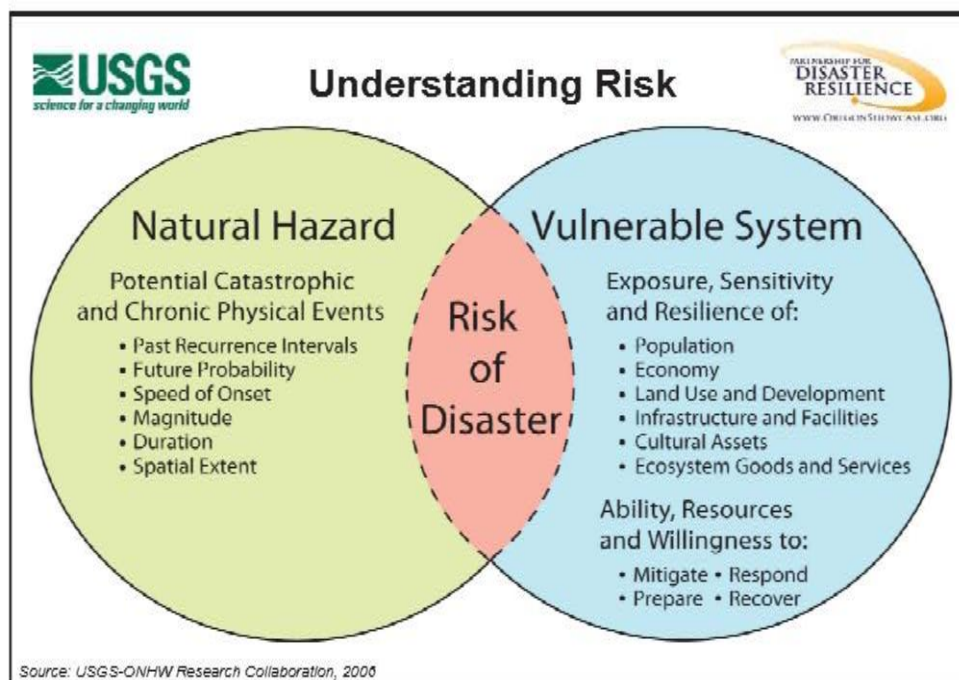
Name and Contact Information	Description	Service Area	Populations Served						Involvement with Natural Hazard Mitigation
			Businesses	Children	Disabled	Elders	Families	Low Income	
Lyons Rural Fire Protection District - 1114 Main Street Lyons, OR 97358	Provide 24/7 response to fire/rescue emergencies and EMS incidents.	City of Lyons and surrounding area (37 sq. mi.)	x	x	x	x	x	x	Plan/Project implementation. Education and outreach. Information dissemination.
North Santiam Canyon Economic Development Corporation - 228 SW Broadway Mill City, OR 97360	Facilitate a broad spectrum of projects with the goal of supporting and sustaining a diverse local economy.	Santiam Canyon Communities	x						Education and outreach. Information dissemination.
North Santiam Chamber of Commerce - 825 W. Santiam Blvd Mill City, OR 97360	Represents the local businesses and disseminates information to businesses and visitors.	Santiam Canyon communities	x						Education and outreach. Information dissemination.
North Santiam School District 29J - 641 Fifth St, Lyons, Oregon 97358	Local school district.	Lyons, Sublimity, Mehama, and surrounding areas		x	x		x	x	Education and outreach. Information dissemination.
Santiam Valley Grange - 1140 5th Street Lyons, Oregon 97358	Organization that provides services to agriculture and rural areas.	Santiam Valley	x						Education and outreach. Information dissemination.



# Section 3: Risk Assessment

This section expands on Linn County's Natural Hazards Mitigation Plan (NHMP) by addressing Lyons' unique risks to the following natural hazards: drought, earthquake, flood, landslide, volcano, wildfire, and severe weather. The information in this section was paired with information from Section 2 Community Profile during the planning process in order to identify issues and develop actions aimed at reducing overall risk, or the area of overlap in Figure 4 below.

**Figure 4. Understanding Risk<sup>22</sup>**



The following hazard assessments describe each hazard's probability of future occurrence within Lyons, as well as the City's overall vulnerability to each hazard. In order to facilitate connections with Linn County and the State of Oregon's probability and vulnerability rating systems, the City of Lyons used the same rating scales as provided within Oregon Emergency Management's Hazard Analysis Methodology template. Note that the City did not complete a full hazard analysis. Probability estimates are based on the frequency of previous events, and vulnerability estimates are based on potential impacts that were discussed during the July 22<sup>nd</sup> Steering Committee meeting.

**Probability** scores address the likelihood of a future major emergency or disaster within a specific period of time as follows:

*High* = One incident likely within a 10-35 year period

*Moderate* = One incident likely within a 35-75 year period

*Low* = One incident likely within a 75-100 year period

**Vulnerability** scores address the percentage of population or region assets likely to be affected by a major emergency or disaster, as follows:

*High* = More than 10% affected

*Moderate* = 1-10% affected

*Low* = Less than 1% affected

The following hazards have been addressed in the Linn County Natural Hazard Mitigation Plan. The City of Lyons reviewed the county's plan on July 22<sup>nd</sup>, 2010 work session and assessed how Lyons's risks vary from the risks facing the entire planning area.

## Drought

The Linn County Natural Hazards Mitigation Plan adequately identifies the causes and characteristics of drought within the region, as well as historical drought events. Droughts can affect all segments of a jurisdiction, particularly those employed in water-dependent activities (e.g., agriculture, recreation, etc.) Additionally, public water providers can experience shortages. The extent (i.e., magnitude or severity) of a drought depends upon the degree of moisture deficiency, and the duration and size of the affected area.

Droughts are a fairly rare occurrence in Lyons, although they're possible if the region has a particularly dry winter season. The climate is typically mild with wet winters and dry summers, and rainfall averages nearly 57 inches per year.<sup>23</sup> According to Linn County's Natural Hazards Mitigation Plan, two major droughts have occurred in the past 34 years. The period between 1976 and 1977 was the single driest year of the century. Oregon experienced statewide droughts in 1992 and 1994. In 2000, Oregon experienced the Klamath drought, which negatively affected outdoor water-related recreation. Similarly, February 2005 was the driest February on record since 1977. Given that drought has never had a significant impact on Lyons, the steering committee estimates a low probability that droughts will occur in the future. (Note: The Linn County NHMP estimates a low probability as well).

The Lyons/Mehama Water District has a water storage capacity of approximately 800,000 gallons supplied by three storage reservoirs, and additional water capacity available as needed, provided from the Big Cliff Reservoir, which is located approximately 3 miles downstream from Detroit Lake. Because the City has adequate existing capacities, and a close proximity to the North Santiam River, the Lyons steering committee estimates a low vulnerability to drought events. Due to expected changes and unpredictability in climate patterns, the City acknowledges



uncertainty in this estimate, and will re-evaluate conditions when this plan is updated.

Portions of a community that are typically affected by droughts include those that depend on agriculturally-based operations, water-dependent recreational activities, and water-borne transportation systems. Domestic water-users may also be subject to conservation measures and/or could be faced with significant increases in electricity or water rates. Additionally, droughts can have severe environmental consequences. A prolonged drought in forests promotes an increase of insect pests, which in turn damages trees that are already weakened by a lack of water. Likewise, a moisture-deficient forest constitutes a significant fire hazard.

Some of the variables that influence the occurrence and extent of drought include; precipitation, runoff, evaporation, soil moisture, and snow pack. Drought should be considered relative to some long-term average condition of balance between precipitation and evapotranspiration in the Lyons area, or the condition perceived as “normal”. Other climatic factors such as high temperature, high wind, and low relative humidity are often associated with drought and can significantly aggravate its severity.<sup>24</sup>

## Earthquake

The Linn County Natural Hazards Mitigation Plan adequately describes the causes and characteristics of earthquake hazards for the region. Earthquakes are fairly infrequent occurrences, but have affected Linn County in the past. The City of Lyons concurs with the county’s historical account.

Linn County’s Natural Hazards Mitigation Plan adequately describes the location of potential earthquakes as well. Refer to the maps and online resources found in the Linn County NHMP Earthquake Scenarios and Ground Motion Maps Section for information on the potential extent of earthquake hazards for Lyons.

When determining the probability of earthquakes, it is difficult to estimate the recurrence intervals from available data. Paleoseismic studies along the Oregon coast indicate that the state has experienced seven Cascadia Subduction Zone (CSZ) events possibly as large as M9 in the last 3,500 years. These events are estimated to have an average recurrence interval between 500 and 600 years, although the time interval between individual events ranges from 150 to 1000 years. Since Linn County’s NHMP was developed in 2005, better earthquake probability estimates have surfaced. Scientists now estimate that the chance in the next 50 years of a great subduction zone earthquake is between 10 and 20 percent assuming that the recurrence is on the order of 400±200 years.<sup>25</sup> Crustal and deep intraplate earthquakes remain difficult to predict.

Linn County estimates a high probability that earthquakes will occur in the future, as well as a high vulnerability to earthquake events. The Lyons

steering committee differed in both the probability and vulnerability ratings, giving Lyons a low probability rating, and a moderate vulnerability rating for seismic events. The extent of structural damages, injuries and deaths will depend on the type of the earthquake, the City's proximity to the epicenter, and the magnitude and duration of the event. Potential earthquake-related impacts are well-documented in Linn County NHMP, but buildings, dams, transportation systems, utility and communication networks, and lifelines including water, sewer, storm-water and gas lines are particularly at risk. Additionally, damages to roads and water systems will make it difficult to respond to post-earthquake fires. The following vulnerabilities/potential impacts were identified by the steering committee and stakeholders:

- Lyons Public Library is located in an older, 2 story unreinforced masonry building. The steering committee believes this building could be damaged in the event of an earthquake.
- As described in Table 5 above, 85.7% of Lyons's housing was built before 1994. Older homes are at a greater risk of damage from earthquake events. Structures built after 1994 in the Northwest used earthquake resistant designs and construction techniques.
- Stable transportation networks are necessary for economic continuity and emergency service provisions. The 5th Street Bridge that crosses the North Santiam River could be vulnerable to seismic activity; likewise, damages to Highway 226 on the south side of Lyons would be detrimental to the transportation system.
- Mari-Linn Elementary School is an unreinforced masonry building and would likely be vulnerable to high magnitude earthquake events.

In 2007, the Department of Geology and Mineral Industries (DOGAMI) conducted a seismic needs assessment for public school buildings, acute inpatient care facilities, fire stations, police stations, sheriff's offices, and other law enforcement agency buildings. Buildings were ranked for the "probability of collapse" due to the maximum possible earthquake for any given area. With the City of Lyons, the following building was given a "very high" probability of collapse rating.

- Mari-Linn Elementary School: very high (100%)

Please refer to Linn County's NHMP for more detail regarding earthquake-related hazards, issues, and estimated vulnerabilities and/or damages in given scenarios. Existing earthquake mitigation activities are also well-documented within Linn County's NHMP.

## Flood

The Linn County Natural Hazards Mitigation Plan adequately describes the causes and characteristics of flooding for the region, as well as the

history of major flooding events.<sup>26</sup> The steering committee indicated that the Detroit Dam sufficiently regulates the flow of the North Santiam River, so that water levels do not exceed bank-full levels.

The steering committee did indicate however that Lyons does experience periodic, localized flooding in areas. Inadequate culverts and drainage facilities to the east of 24<sup>th</sup> Street have caused significant flooding problems in adjacent areas. Trask Creek, flowing along the southern edge of Lyons is also an area of concern according to the Lyons Steering Committee. Trask Creek is a drainage ditch for the hills south of Lyons. Excessive vegetation in and around Trask Creek contributes to flooding in portions of southern Lyons around Trask Creek.

A comprehensive description of all areas of special flood hazards for Lyons are contained in a report entitled “The Flood Insurance Study for the City of Lyons”, and contains accompanying flood insurance maps. This report is on file at City Hall in Lyons.

Lyons updated Flood Insurance Rate Map (FIRM) is dated for September 29<sup>th</sup>, 2010.<sup>27</sup> The City has been a participant in the National Flood Insurance Program (NFIP) since December 1981.<sup>28</sup> As of April 12, 2010, the City has 11 NFIP policies in force at a total value of \$2,386,100. There have been a total of zero claims and no losses paid. Lyons has no repetitive flood loss buildings. Lyons does not participate in the Community Rating System.

To mitigate the impacts of future flood events the City of Lyons has adopted Chapter 15.10 of the Lyons Municipal Code: Flood Damage Prevention, and has not been revised since the Lyons Municipal Code 2006 republication. The purpose of the Lyons Municipal Code Flood Damage Prevention Chapter 15.10 is to minimize public and private losses due to flood conditions. Methods of reducing flood losses described in this chapter include:

- Restricting or prohibiting uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities.
- Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction.
- Controlling the alteration of natural flood plains, stream channels, and natural protective barriers, which help accommodate or channel flood waters.
- Controlling filling, grading, dredging, and other development which may increase flood damage.

- Preventing or regulating the construction of flood barriers which will unnaturally divert flood waters or may increase flood hazards in other areas.

For more information on the Lyons Municipal Code flood damage prevention methods, please refer to City of Lyons Municipal Code, Chapter 15.10 – Flood Damage Prevention. Available on the City of Lyons Website: <http://www.cityoflyons.org/city-codes>

The Linn County Natural Hazard Mitigation Plan did not provide a probability or vulnerability assessment for flood. Upon review of the history of flooding in Lyons, the Lyons steering committee gave Lyons a high probability of flooding in the future, and a moderate vulnerability to flood events.

The steering committee indicated that the population group most vulnerable to this and other natural hazards is young children. These include children concentrated for much of the year at Mari-Linn Elementary, and privately owned day care centers.

## **Landslide**

The Linn County Natural Hazards Mitigation Plan adequately describes the causes, characteristics, location and extent of landslides for the region. Currently, there is no comprehensive list of landslide events and/or dates for Linn County<sup>29</sup>, and the same is true for the City of Lyons.

Linn County estimates a high probability for landslides, and a low vulnerability. The Lyons steering committee indicated that no landslides have been experienced within the City limits due to the City's topography. This was the primary reason why Lyons estimates a low probability that landslides will occur within City limits. Additionally, Lyons estimates a low vulnerability to landslide events, meaning less than 1% of Lyons's population or community assets could be affected by a landslide event. Depending upon the type, location, severity, and area affected, property damage, injuries and loss of life could be caused by landslide hazards, but those circumstances are not likely to occur inside Lyons. Landslides can damage or temporarily disrupt utility services, roads and other transportation systems and critical lifeline services such as police, fire, medical, utility and communication systems, and emergency response. In addition to the immediate damage and loss of services, serious disruption of roads, infrastructure and critical facilities and services may also have longer term impacts on the economy of the community and surrounding area. Highway 226 southwest of Lyons is the main landslide concern to the Lyons steering committee due to the steep slopes, minimal shoulder, and it being a primary access road.

## **Wildfire**

The Linn County Natural Hazard Mitigation Plan accurately describes the causes and characteristics of wildfire in Linn County, as well as the history

of wildfire events. Lyons has no significant instances of wildfire events to date.

As mentioned in the Linn County Natural Hazard Mitigation Plan, the wildland-urban interface is not designated by geography alone, and certain conditions must be present for significant interface fires to occur (i.e., hot, dry, windy weather; inability of fire protection forces to contain or suppress the fire; the occurrence of multiple fires that overwhelm resources; and a large fuel load, or dense vegetation). Likewise, the severity of a wildfire is affected by the severity of these conditions.<sup>30</sup> Please see Linn County's NHMP for a more comprehensive description of the conditions that create and/or exacerbate wildfire events.

Within the Linn County Community Wildfire Protection Plan (CWPP), the City of Lyons is listed as a "Community at Risk." The term "at-risk community" means an area:

- (A) That is comprised of (i) an interface community as defined in the notice entitled "Wildland Urban Interface Communities Within the Vicinity of Federal Lands That Are at High Risk From Wildfire" issued by the Secretary of Agriculture and the Secretary of the Interior in accordance with title IV of the Department of the Interior and Related Agencies Appropriations Act, 2001 (114 Stat. 1009) (66 Fed. Reg. 753, January 4, 2001); or (ii) a group of homes and other structures with basic infrastructure and services within or adjacent to Federal land;
- (B) In which conditions are conducive to a large-scale wildland fire disturbance event;
- (C) For which a significant threat to human life or property exists as a result of a wildland fire disturbance event.<sup>31</sup>

Linn County estimates a high probability that wildfires will occur in the future. Given Lyons's wildfire history, and proximity to wildland areas, a low probability rating is accurate for the City. According to Linn County's CWPP, Lyons' "fire behavior potential" is influenced by the moderate slopes in the community, broken moderate fuels, and some ladder fuels. The composition of surrounding fuels is conducive to torching and spotting.<sup>32</sup>

Linn County estimates a moderate vulnerability to wildfire events. Because the City has surrounding wildland-urban interface areas Lyons also estimates a moderate vulnerability to wildfire events. The following are vulnerabilities that Lyons could have to wildfire events:

- Residents who live in the wildland urban interface are a risk to wildfire hazards. These areas include residences on the western border of town, near the wooded areas abutting the northwestern edge of town.

- Children, the elderly, asthma sufferers, and hospital patients may be vulnerable to smoke inhalation or excessive ash fall caused by wildfires.
- Wildfires can have a significant impact on local environmental assets. Wildfires can disrupt the intake of water on the North Santiam River and Trask Creek, either by damaging intake systems or polluting the water source, both of which could disrupt the City's water supply. Parks located within the City such as John Neal Memorial Park and Freres City Park, could be significantly damaged by wildfires as well.
- The City needs to identify emergency shelters to house populations post-disaster (for wildfire and all other hazards as well). Potential sites suggested by the steering committee include the Mari-Linn Elementary, Santiam Chapel, Canyon Baptist Church, and the Lyons Public Library.

Lyons does not state land use protection measures for wildfire in the comprehensive plan. Lyons also has limited infrastructure to fight wildfires. This includes a limited number of access routes and limited water supplies.

For more information about potential wildfire-related impacts (i.e., general impacts), please see Linn County's Natural Hazards Mitigation Plan.

## Severe Weather

Severe weather events pose a significant threat to life, property, and the local economy in Lyons by creating conditions that disrupt essential services such as public utilities, telecommunications, and transportation routes. Such storms can produce rain, freezing rain, ice, snow, cold temperatures, high winds and tornadoes. High winds, tornadoes and ice storms can destroy trees and power lines, potentially interrupting utility services. These conditions have been grouped, and described below in two categories; windstorm and winter storm events.

### Windstorm

The Linn County Natural Hazards Mitigation Plan adequately describes the causes, characteristics, location, and extent of severe weather. Linn County's plan also describes historical wind storm events. Significant recent windstorm and tornado events that have impacted the Willamette Valley, Linn County, and Lyons, are described in Table 10 below.

**Table 10. Historical Windstorm Events**

Date	Wind Storm Event
<b>December 2010</b>	Strong winds produced a tornado which touched down northwest of Lyons, passing through Aumsville and Silverton, destroying or damaging over 50 homes, and causing power outages affecting 5,700 people, including Lyons residents.
<b>January 2009</b>	Strong winds uprooted trees, damaged buildings.
<b>February 2002</b>	Hurricane force winds blew through Lyons. Strongest storm to strike western Oregon in years.
<b>December 1995</b>	Followed path of Columbus Day Storm. High speed winds experienced in Lyons. Damage to trees (saturated soil a factor) and homes. (FEMA-1107-DR-OR)
<b>October 1962</b>	Columbus Day Storm; Oregon’s most destructive storm to date. 116 mph winds in Willamette Valley, including Lyons. Houses severely damaged in Lyons. Willamette Valley total damage estimated at \$170 million.

Source: Lyons Natural Hazard Mitigation Plan Workgroup, 2010. Linn County Natural Hazards Mitigation Plan, 2010; National Climatic Data Center.

In addition to the tornado listed above, the Willamette Valley has also experienced other tornadoes, many of which have produced significant damage and occasional injury or death. Since 1994, Linn County has experienced 3 tornadoes, 2 of which occurred near Lyons. In March 1994, a small tornado touched down in Albany. In September 2007 a tornado damaged several buildings in Lebanon.

Linn County estimates a high probability that windstorms will occur, and a moderate vulnerability to windstorm events. The Lyons Steering Committee concurs with the probability assessment of Linn County, but differs in the vulnerability assessment, giving Lyons a high vulnerability rating.

Windstorms can have significant impacts on life and property. Debris carried along by extreme winds can contribute directly to injury and loss of life and indirectly through the failure of protective structures (i.e., buildings) and infrastructure. Windstorms have the ability to cause damage more than 100 miles from the center of storm activity. High winds can topple trees and break limbs which in turn can result in power outages and disrupt telephone, computer, and TV and radio service. Street trees in Lyons are particularly vulnerable to damaging utilities and property.

Likewise, the riparian area alongside the North Santiam River has many trees that could damage adjacent buildings.

In addition to the immediate effects of wind damage, the loss of power due to windstorms can have widespread impacts on business and economic activity. Downed trees can block roads and railways, disrupting access to businesses, or blocking waterways, creating flood problems. The Lyons Steering Committee stated that power outages were an annual occurrence for residents and businesses. Prolonged outages could potentially cause serious strain on residents in need of provisions and emergency services in the event of a natural disaster.

Please see Linn County’s NHMP for a comprehensive description of potential windstorm-related impacts, including the effects that are likely to occur at varying wind speeds.

## Winter Storm

The Linn County Natural Hazards Mitigation Plan adequately describes the causes and characteristics of severe winter storms for the entire planning area, including the City of Lyons. Snow and ice are relatively rare in western Oregon, but cold air can occasionally be funneled through the Cascades between the Gorge and Portland. If a Pacific storm happens to reach the area at the same time that the cold air is present, larger than average snow events may result.<sup>33</sup> Winter storms can happen throughout Linn County, including the City of Lyons, and the extent of the storms will depend upon precipitation levels, temperatures, and the effects of the storm system on the built environment.

Significant recent severe winter storm events that have impacted the Willamette Valley, Linn County, and Lyons are described in Table 11 below.

**Table 11. Historical Winter Storm Events**

<b>Date</b>	<b>Winter Storm Event</b>
<b>December 2009</b>	Severe winter weather causing tree damage and property damage
<b>December 2005</b>	Winter storm causing five-day power outage
<b>December - January 2002</b>	Severe winter weather.

Source: Lyons Natural Hazard Mitigation Workgroup, 2010; National Climatic Data Center.

Linn County estimates a high probability that severe winter storms will occur in the future, as well as a high vulnerability to such events. Both ratings are also true for the City of Lyons.

Winter storms can bring snow, ice, and high winds that can cause significant damage to property and people. Downed trees and limbs



caused by ice storms can become major hazards for houses, cars, transportation infrastructure, utilities and other property. Residents and visitors are vulnerable to winter storms because icy roads can make it difficult to drive, and prolonged exposure to the cold can cause hypothermia. The temporary loss of home heating can be particularly hard on the elderly, young children, and other vulnerable populations. Icy roads can also limit the mobility of the elderly and very young if they need to be evacuated.

Severe winter weather such as winter or wind storms can temporarily close key roads and highways, businesses, schools, government offices and other important community services. Long-term closure of Interstate 5 and state highways such as Highway 226 can be problematic for Lyons businesses which rely on the City's access to major transportation routes. Retail establishments may be particularly vulnerable if they do not have continuity of operations plans in place. Below freezing temperatures can also lead to breaks in uninsulated water lines. Ice on tree limbs and power lines can cause power failures as well. All of these effects, if they last more than several days, can create significant economic impacts for Lyons as well for the surrounding region.

Please see Linn County's Natural Hazards Mitigation Plan for a more comprehensive description of potential winter storm-related community impacts.



# Section 4: Mission, Goals, and Action Items

## Mission

The mission of the Lyons Addendum is: to reduce the impact of natural hazards on the community through planning, communication, coordination and partnership development. This mission statement was adopted from the Linn County Natural Hazard Mitigation Plan (NHMP) mission statement. In order to develop the mission statement, the steering committee reviewed the existing Linn County NHMP mission statement, and determined that it was applicable for Lyons.

## Goals

The plan goals help guide the direction of future activities aimed at reducing risk and preventing loss from natural hazards. The goals and subsequent objectives listed here serve as checkpoints as agencies and organizations begin implementing mitigation action items.

**Goal #1:** Enhance coordination and communication among Lyons stakeholders to implement the Plan.

- Objective 1.1: Establish and maintain methods to ensure plan implementation.
- Objective 1.2: Provide leadership to promote, communicate, and support disaster safety messages and activities.

**Goal #2:** Protect life, the built environment and natural systems through City of Lyons policies, procedures and services.

- Objective 2.1: Incorporate mitigation into planning and policy development.
- Objective 2.2: Support the enhancement of County vulnerability assessment activities.
- Objective 2.3: Ensure the continuity of County emergency support functions.
- Objective 2.4: Implement structural and non-structural mitigation of publicly owned facilities and infrastructure.

**Goal #3:** Protect life, the built environment, the economy and natural resources through multi-jurisdictional partnerships.

- Objective 3.1: Increase citizen awareness and promote risk reduction activities through education and outreach.
- Objective 3.2: Develop collaborative programs that encourage local businesses to plan for disasters.
- Objective 3.3: Develop partnerships with external partners for hazard specific mitigation projects.

To develop the Lyons Addendum goals, the steering committee reviewed the existing goals found in the Linn County NHMP and held a discussion of whether those goals were appropriate goals for Lyons. The steering committee determined that the goals and objectives of the Linn County NHMP were largely appropriate for the City of Lyons, and only made slight changes to goal wording to reflect goals appropriate for a city rather than a county.

## Mitigation Action Items

Short and long-term action items identified through the planning process are an important part of the mitigation plan. Action items are detailed recommendations for activities that local departments, citizens and others could engage in to reduce risk.

The following actions were developed by the City's steering committee, with assistance from the Oregon Partnership for Disaster Resilience. The City's steering committee grouped their full list of actions according to the hazard being addressed. The steering committee then chose the time frame for implementing the action item. The time frames were; short term (0-2 years), long term (2-4+ years), or ongoing.

### Drought

1. Provide information regarding droughts and other natural hazards on the City's website. Provide hard copies at Lyons City Hall.

### Earthquake

1. Request that ODOT assess the seismic stability of the 5th Street Bridge and seek funding for seismic retrofitting/reinforcement of vulnerable buildings as needed.
2. Increase educational opportunities and understanding of the impact a major earthquake would have on Lyons by providing links to DOGAMI and HAZUZ-MH studies on the City's website.
3. Update the housing structure age and housing structure type data in the Lyons Hazard Mitigation Addendum.

## **Flood**

1. Develop partnerships with ODOT, Linn County, and Albany Eastern Railroad to coordinate vegetation removal and ongoing maintenance activities in and around Trask Creek.
2. For locations with repetitive flooding and significant damages or road closures, determine and implement mitigation measures such as upsizing culverts or storm water drainage ditches.
3. Ensure continued compliance in the National Flood Insurance Program (NFIP) through enforcement of the provisions of flood damage prevention in the Lyons Municipal Code.

## **Severe Weather**

1. Provide training for public works employees on ANSI tree care standards and practices. Continue to support/encourage underground placement of public utilities infrastructure thereby minimizing power outages resulting from severe weather.
2. Partner with Freres Lumber Company and Pacific Power & Light to secure an emergency backup power source from the Co-Gen plant located south of Lyons.

## **Wildfire**

1. Implement wildfire actions in the Linn County Community Wildfire Protection Plan as they relate to Lyons.

## **Multi-Hazard**

1. Continue public education efforts aimed at informing citizens of the natural hazards Lyons is vulnerable to and mitigation measures residents can take independently to protect new and existing property.

# **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. These worksheets can be found in Appendix D – Action Item Worksheets. Individual components of the worksheet are described below.

### **Proposed Action Title:**

Includes a brief description of the proposed action.

**Alignment with Plan Goals:**

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.

**Alignment with Existing Plans/Policies:**

Identifies any existing community plans and policies where the action item can be incorporated. Incorporating the mitigation action into existing plans and policies, such as comprehensive plans, will increase the likelihood that it will be implemented.

**Rationale or Key Issues Addressed:**

The rationale describes the critical issues that the action item will address. It presents the logic and the fact base behind the action item: why is it important that this action item be implemented?

**Ideas for Implementation:**

For each action item, the form asks for some ideas for implementation, which serve as the starting point for taking action. This information offers a transition from theory to practice. Ideas for implementation could include: (1) collaboration with relevant organizations, (2) alignment with the community priority areas, and (3) applications to new grant programs.

The ideas for implementation are just that: ideas. They do not necessarily prescribe the exact steps that Lyons or its partners should take to implement a particular action item. When an action is implemented, more work will probably be needed to determine the exact course of action.

**Coordinating Organization:**

The coordinating organization is the public agency with authority to implement the identified action. It can also be an agency that is willing and able to organize resources, find appropriate funding, or oversee activity implementation, monitoring, and evaluation.

**Internal Partners:**

Internal partner organizations are departments within the jurisdiction that may be able to assist in the implementation of an action item by providing relevant resources (time, budget, staff, data, etc.) to the coordinating organization.

**External Partners:**

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

**Potential Funding Sources:**

Where possible, identify potential funding sources for the action item. Example funding sources can include: the federal Pre-Disaster Mitigation

and Flood Mitigation Assistance Programs; state funding sources such as the Oregon Seismic Rehabilitation Grant Program; or local funding sources such as capital improvement or general funds. An action item may also have multiple funding sources.

**Estimated Cost:**

Includes an estimate of the cost for implementing the action item.

**Timeline:**

Action items include both short- and long-term activities. Each action item includes an estimate of the timeline for implementation. Short-term action items (ST) are activities that the jurisdiction may implement with existing resources and authorities within one to two years. Long-term action items (LT) may require new or additional resources and/or authorities, and may take more than two years to implement.

**Status:**

As action items are implemented or new ones are created during the plan maintenance process, it is important to indicate the status of the action item – whether it is new, ongoing, or complete. Documenting the status of the action will make reviewing and updating mitigation plans easier during the plan’s five-year update, and can be used as a benchmark for progress.

Full action item worksheets are located in Appendix D.





# Section 5: Plan Implementation and Maintenance

This section details the formal process that will ensure that the City of Lyons Addendum remains an active and relevant document. The plan implementation and maintenance process includes a schedule for reviewing the plan annually, as well as producing an updated plan every five years. Because this addendum lives within the Linn County Natural Hazard Mitigation Plan, the City will coordinate with the County's five-year plan update schedule.

Finally, this section describes how the City will integrate public participation throughout the plan maintenance and implementation process.

## Plan Adoption

After the addendum is locally reviewed and deemed complete, Mary Mitchell, the Lyons City Manager, will submit it to the State Hazard Mitigation Officer at Oregon Emergency Management. Oregon Emergency Management submits the plan to the Federal Emergency Management Agency (FEMA--Region X) for review. This review addresses the federal criteria outlined in the FEMA Interim Final Rule 44 CFR Part 201. Upon acceptance by FEMA, the City will adopt the plan via resolution. At that point the City will gain eligibility for the Pre-Disaster Mitigation Grant Program, the Hazard Mitigation Grant Program funds, and Flood Mitigation Assistance program funds.

The City Council will be responsible for adopting the City of Lyons's Natural Hazard Mitigation Plan Addendum. This governing body has the authority to promote sound public policy regarding natural hazards.

## Successful Plan Implementation and Maintenance

Successful plan implementation and maintenance requires many elements, including but not limited to the following list of implementation and maintenance best practices.

- Confirm and clarify responsibilities for all action items contained in the plan. Designating responsibility for carrying out each action item eliminates uncertainty about who is accountable for that action item. It is imperative that each agency or organization is

represented on the coordinating body during the implementation phase.

- Regular meetings of the Coordinating Body to discuss plan integration, action item status, and other mitigation activities/opportunities.
- Incorporating the NHMP's action items into regulatory plans or documents, most importantly, the City's Comprehensive Plan. The Goal 7 element of the Comprehensive Plan can be informed by the specific information on hazard risk found in the NHMP.
- Partnering and working with other organizations on public involvement activities or hazard mitigation projects.
- Involve public officials in the oversight, visibility, and budgeting of plan implementation. The presence of public officials on the steering committee is essential for evaluating political factors of mitigation actions, as well as in the oversight, visibility, and budgeting of the plan.
- Creating a sense of ownership. Involving several individual and private partners in hazard mitigation projects helps in creating a bottom-up, demand driven planning process in the future.
- Developing a regular interim report to track current efforts. Recipients of federal funding for implementing natural hazard mitigation actions are required to submit quarterly reports on progress made on those actions. This also gives the coordinating body a better sense of how successful the implementation process has been.
- Revise the plan as new information becomes available. Conducting plan evaluations is a valuable way to make improvements to the plan. The frequency of evaluations is based on changes within the community, or the occurrence of hazardous events.

Remember to celebrate successes. Celebrating successful projects and initiatives is an effective way to create a culture of hazard conscientiousness in the community. Spreading the word about mitigation project successes will also make it easier to leverage the funds needed to complete future actions.

Most of these recommendations are common sense, and all of them have been recommended as FEMA's best practices for effective plan implementation and maintenance. Following through on them requires creativity and a sustained commitment to your maintenance schedule.

## **Convener**

On August 26<sup>th</sup>, 2010, the Lyons steering committee identified the City Manager as the convener for Lyons's Addendum to the Linn County Natural Hazards Mitigation Plan. The convener's responsibilities include:

- Coordinate steering committee meeting dates, times, locations, agendas, and member notification;
- Document outcomes of committee meetings;
- Serve as a communication conduit between the steering committee and key plan stakeholders;
- Identify emergency management-related funding sources for natural hazard mitigation projects;
- Incorporate, maintain, and update the City's natural hazard risk GIS data elements; and
- Utilize the risk assessment as a tool for prioritizing proposed natural hazard risk reduction projects.

## **Coordinating Body**

On August 26<sup>th</sup>, 2010, the Steering Committee identified the current Lyons Natural Hazard Mitigation workgroup as the group that will act as the coordinating body throughout the plan implementation and maintenance process. This includes the following individuals and the organizations those individuals will represent.

- Michael Lucas - Mayor
- Lon Conner - City Council
- Kim Hunn - Planning Commission
- Micki Valentine - Lyons Rural Fire District
- Kyle Freres - Freres Lumber
- Bill Grimes - Lyons/Mehama Water District
- Mary Mitchell - City Manager
- Audrey McNerney - Assistant City Manager
- Steve Baldwin - Lyons Planning Commission
- Clastine Ritchie - Lyons Planning/Parks and Recreation
- Gary Rychard - North Santiam School District

To make the coordination and review of the Lyons Addendum as broad and useful as possible, the steering committee will engage additional

stakeholders and other relevant hazard mitigation organizations and agencies to implement the identified action items. Specific organizations have been identified as either internal or external partners on the individual action item forms found in Appendix D.

The coordinating body's roles and responsibilities include:

- Serving as the local evaluation committee for funding programs such as the Pre-Disaster Mitigation Grant Program, the Hazard Mitigation Grant Program funds, and Flood Mitigation Assistance program funds;
- Prioritizing and recommending funding for natural hazard risk reduction projects;
- Documenting successes and lessons learned;
- Evaluating and updating the natural hazards mitigation plan following a disaster;
- Evaluating and updating the natural hazards mitigation plan in accordance with the prescribed maintenance schedule; and
- Developing and coordinating ad hoc and/or standing subcommittees as needed.

## **Plan Maintenance**

Plan maintenance is a critical component of the natural hazard mitigation plan. Proper maintenance of the plan ensures that this plan will maximize the City's efforts to reduce the risks posed by natural hazards. This section includes a process to ensure that a regular review and update of the plan occurs. The steering committee and local staff are responsible for implementing this process, in addition to maintaining and updating the plan through the bi-annual meetings outlined in the maintenance schedule below.

## **Biennial Meetings**

The committee will meet every two years to complete the following tasks. The coordinating body will draw from the following agenda items when developing meeting topics:

- Review existing action items to determine appropriateness for funding;
- Educate and train new members on the plan and mitigation in general;
- Identify issues that may not have been identified when the plan was developed;
- Prioritize potential mitigation projects using the methodology described below;

- Review existing and new risk assessment data;
- Discuss methods for continued public involvement; and
- Document successes and lessons learned.

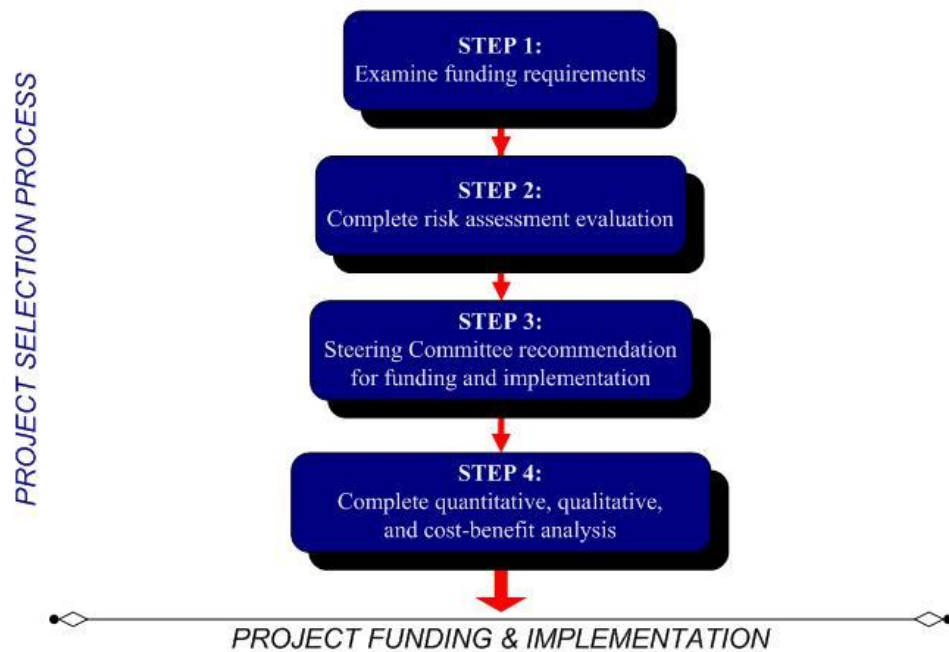
The convener will be responsible for documenting the outcome of these meetings. The process the committee will use to prioritize mitigation projects is detailed in the section below. The plan's format allows the City to review and update sections when new data becomes available. New data can be easily incorporated, resulting in a natural hazards mitigation plan that remains current and relevant to the participating jurisdictions.

### **Project Prioritization Process**

The Disaster Mitigation Act of 2000 (via the Pre-Disaster Mitigation Program) requires that jurisdictions identify a process for prioritizing potential actions. Potential mitigation activities often come from a variety of sources; therefore the project prioritization process needs to be flexible. Projects may be identified by committee members, local government staff, other planning documents, or the risk assessment. Figure 5 illustrates the project development and prioritization process.

**Figure 5. Project Prioritization Process**

*Action Item and Project Review Process*



Source: Community Service Center's Partnership for Disaster Resilience at the University of Oregon, 2008.

**Step 1: Examine funding requirements**

The steering committee will identify how best to implement individual actions within the appropriate existing plans, policies, or programs. The committee will examine the selected funding stream's requirements to ensure that the mitigation activity would be eligible through the funding source. The committee may consult with the funding entity, Oregon Emergency Management, or other appropriate state or regional organizations about the project's eligibility.

Depending on the potential project's intent and implementation methods, several funding sources may be appropriate. Examples of mitigation funding sources include, but are not limited to: FEMA's Pre-Disaster Mitigation competitive grant program (PDM), Flood Mitigation Assistance program (FMA), National Fire Plan (NFP), Community Development Block Grants (CDBG), local general funds, and private foundations.

**Step 2: Complete risk assessment evaluation**

The second step in prioritizing the plan's action items is to examine which hazards they are associated with and where these hazards rank in terms of community risk. The committee will determine whether or not the plan's risk assessment supports the implementation of the mitigation activity.

This determination will be based on the location of the potential activity and the proximity to known hazard areas, historic hazard occurrence, vulnerable community assets at risk, and the probability of future occurrence documented in the plan.

### **Step 3: Committee Recommendation**

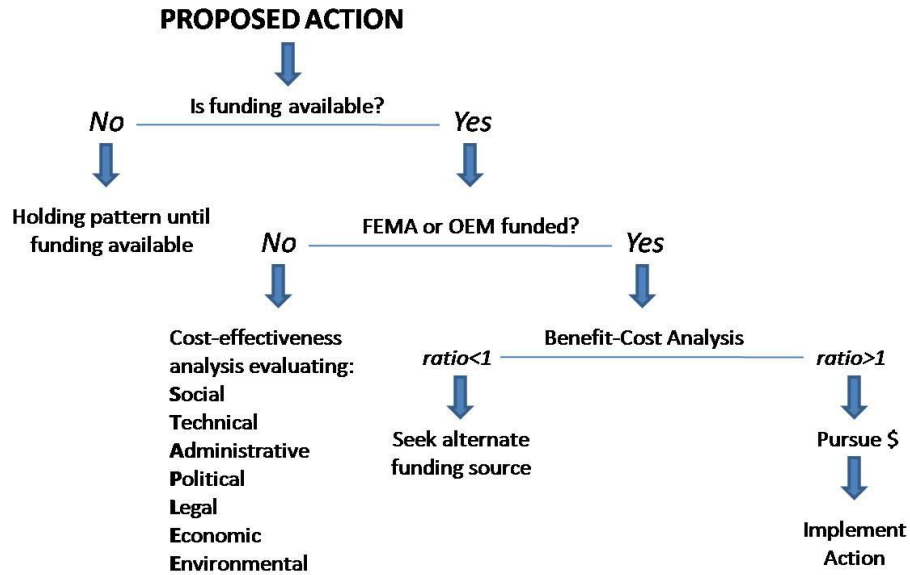
Based on the steps above, the committee will recommend whether or not the mitigation activity should be moved forward. If the committee decides to move forward with the action, the coordinating organization designated on the action item form will be responsible for taking further action and, if applicable, documenting success upon project completion. The committee will convene a meeting to review the issues surrounding grant applications and to share knowledge and/or resources. This process will afford greater coordination and less competition for limited funds.

The committee and the community's leadership have the option to implement any of the action items at any time, (regardless of the prioritized order). This allows the committee to consider mitigation strategies as new opportunities arise, such as funding for action items that may not be of the highest priority. This methodology is used by the committee to prioritize the plan's action items during the annual review and update process.

### **Step 4: Complete quantitative and qualitative assessment, and economic analysis**

The fourth step is to identify the costs and benefits associated with natural hazard mitigation strategies, measures or projects. Two categories of analysis that are used in this step are: (1) benefit/cost analysis, and (2) cost-effectiveness analysis. Conducting benefit/cost analysis for a mitigation activity assists in determining whether a project is worth undertaking now, in order to avoid disaster-related damages later. Cost-effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal. Determining the economic feasibility of mitigating natural hazards provides decision makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects. Figure 6 shows decision criteria for selecting the appropriate method of analysis.

**Figure 6. Benefit Cost Decision Criteria**



Source: Community Service Center’s Partnership for Disaster Resilience at the University of Oregon, 2006.

If the activity requires federal funding for a structural project, the committee will use a Federal Emergency Management Agency-approved cost-benefit analysis tool to evaluate the appropriateness of the activity. A project must have a benefit/cost ratio of greater than one in order to be eligible for FEMA grant funding.

For non-federally funded or nonstructural projects, a qualitative assessment will be completed to determine the project’s cost effectiveness. The committee will use a multivariable assessment technique called STAPLE/E to prioritize these actions. STAPLE/E stands for Social, Technical, Administrative, Political, Legal, Economic, and Environmental. Assessing projects based upon these seven variables can help define a project’s qualitative cost effectiveness. The STAPLE/E technique has been tailored for use in natural hazard action item prioritization by the Oregon Partnership for Disaster Resilience at the University of Oregon’s Community Service Center. See Appendix C for a description of the STAPLE/E evaluation methodology.

### **Continued Public Involvement & Participation**

The City of Lyons is dedicated to involving the public directly in the continual reshaping and updating of the Lyons Natural Hazard Mitigation Plan Addendum. Although members of the steering committee represent the public to some extent, the public will also have the opportunity to continue to provide feedback about the plan.

To ensure continued public involvement and participation in the City’s plan update processes, the City of Lyons will do the following



- Provide a link to the Natural Hazard Mitigation Plan on the Lyons website.
- Make a copy of the Natural Hazard Mitigation Plan available at the City Library.
- Provide notice to the public regarding the date and time of plan Maintenance meetings. These meetings will be open to the public.

In addition to the involvement activities listed above, the City's natural hazard mitigation plan addendum has been archived and posted on the University of Oregon Libraries' Scholar's Bank Digital Archive.

## **Five-Year Review of Plan**

This plan will be updated every five years in conjunction with the Linn County Natural Hazard Mitigation Plan. During this plan update, the following questions will be asked to determine what actions are necessary to update the plan. The convener will be responsible for convening the City's steering committee to address the questions outlined below.

- Are the plan's goals still applicable?
- Do the plan's priorities align with state priorities?
- Are there new partners that should be brought to the table?
- Are there new local, regional, state or federal policies influencing natural hazards that should be addressed?
- Has the community successfully implemented any mitigation activities since the plan was last updated?
- Have new issues or problems related to hazards been identified in the community?
- Do existing actions need to be reprioritized for implementation?
- Are the actions still appropriate, given current resources?
- Have there been any changes in development patterns that could influence the effects of hazards?
- Are there new studies or data available that would enhance the risk assessment?
- Has the community been affected by any disasters? Did the plan accurately address the impacts of this event?

The questions above will help the committee determine what components of the mitigation plan need updating. The committee will be responsible for updating any deficiencies found in the plan based on the questions above.

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- <sup>1</sup> City-Data.com. <http://www.city-data.com/city/Lyons-Oregon.html>
- <sup>2</sup> Weather.com. Temperature and Precipitation Averages. <http://www.weather.com/weather/wxclimatology/monthly/graph/97458?locid=97358>
- <sup>3</sup> Portland State University, Population Research Center. <http://www.pdx.edu/prc/>
- <sup>4</sup> U.S. Census Bureau, 2000 Census. P41 – Age by types of disability for civilian non-institutionalized population 5 years and over with disabilities. Summary File 3.
- <sup>5</sup> U.S. Census Bureau, 2000 Census. P87 – Poverty status in 1999 by age. Summary File 3.
- <sup>6</sup> U.S. Census Bureau, 2000 Census. P12 – Sex by Age. Summary File 1.
- <sup>7</sup> Infrastructure Finance Authority. Lyons Community Profile. <http://www.orinfrastructure.org/profiles/Lyons/>
- <sup>8</sup> OregonJobMatch.com. <http://www.oregonjobmatch.com/employers-LINN-County-Oregon.htm>
- <sup>9</sup> U.S. Census Bureau, 2000 Census. P31 – Travel time to work for workers 16 and over. Summary File 3.
- <sup>10</sup> U.S. Census Bureau, 2000 Census. P49 – Sex by industry for the employed civilian population 16 years and over. Summary File 3.
- <sup>11</sup> U.S. Census Bureau, 2000 Census. Fact Sheet: Linn County, Oregon.
- <sup>12</sup> U.S. Census Bureau, 2000 Census. QT-H1 – General housing characteristics. Summary File 1.
- <sup>13</sup> U.S. Census Bureau, 2000 Census. QT-H4 – Physical housing characteristics – all housing units. Summary File 3.
- <sup>14</sup> U.S. Census Bureau, 2000 Census. DP4 - Profile of selected housing characteristics. Summary File 3.
- <sup>15</sup> U.S. Census Bureau, 2000 Census. GCT-PH1 – Population, Housing Units, Area, and Density. Summary File 1.
- <sup>16</sup> Albany and Eastern Railroad Company website. <http://www.albanyeastern.com/>
- <sup>17</sup> U.S. Census Bureau, 2000 Census. DP3 – Profile of Selected Economic Characteristics: Summary File 3.
- <sup>18</sup> North Santiam School District, Mari-Linn School. <http://mari-linnelem.nsantiam.orvsd.org/content/about-us>
- <sup>19</sup> Oregon Historic Sites Database. [http://heritagedata.prd.state.or.us/historic/index.cfm?do=v.dsp\\_main](http://heritagedata.prd.state.or.us/historic/index.cfm?do=v.dsp_main)
- <sup>20</sup> City of Lyons website. <http://cityoflyons.org/city-government>

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<sup>21</sup> Burby, Raymond J., ed. 1998. *Cooperating with Nature: Confronting Natural Hazards with Land-Use Planning for Sustainable Communities*.

<sup>22</sup> Source: USGS - Partnership for Disaster Resilience Research Collaborative, 2006.

<sup>23</sup> Weather.com. Temperature and Precipitation Averages.

<http://www.weather.com/weather/wxclimatology/monthly/graph/97458?locid=97358>

<sup>24</sup> National Drought Mitigation Center website.

<http://www.drought.unl.edu/whatis/concept.htm>.

<sup>25</sup> NOAA, 1993. Tsunamis affecting the West Coast of the United States: 1806-1992.

<sup>26</sup> Linn County Natural Hazards Mitigation Plan: Section 6: Flood

<sup>27</sup> FEMA. 2010. Community Status Book Report: Oregon: Communities Participating in the National Flood Program.

<sup>28</sup> FEMA 2010 Repetitive Loss/BCX Claims – Oregon.

<sup>29</sup> Marion County Natural Hazards Mitigation Plan, Landslide Chapter.

<sup>30</sup> Marion County Natural Hazards Mitigation Plan, Wildfire Chapter.

<sup>31</sup> Marion County Community Wildfire Protection Plan (CWPP), Appendix C.

<sup>32</sup> Marion County Community Wildfire Protection Plan (CWPP), Appendix C.

<sup>33</sup> Marion County Natural Hazards Mitigation Plan, Severe Winter Storm Chapter.