

# Section 3

## Risk Assessment Summary

An important component of the Lane County Natural Hazards Mitigation Plan is the risk assessment. This section provides a summary of findings that include background information on the process used to develop the risk assessment, as well as overviews of Lane County's risk to only the primary natural hazards addressed by this plan: earthquakes, floods, landslides, wildfires, windstorms, and winter storms. Complete risk assessment information for all hazards can be found in hazard specific annexes at the end of the plan.

### What is a Risk Assessment?

The risk assessment process is used to identify and evaluate the impact of natural hazards on the human-built environment, businesses, social structure and services, and the natural environment of a community. Risk assessments provide information about the areas where the hazards may occur, the value of existing land and property in those areas, and an analysis of the potential risk to life property, and the environment that may result from natural hazard events. Specifically, the following elements are present in a risk assessment:

- 1) **Hazard Identification** identifies the geographic extent of the hazard, the intensity of the hazard, and the probability of its occurrence. Maps are frequently used to display hazard identification data. Lane County identified six major hazard that consistently affect or threaten its geographic area. These hazards – earthquakes, floods, landslides, wildfires, windstorms, and winter storms – were identified through a process that utilized input from a project steering committee, subject matter experts, and historical records (as well as through the Lane County Risk Assessment completed in Phases Two and Three of the County's mitigation planning process).
- 2) **Profiling Hazard Events** describes the causes and characteristics of each hazard, how they have affected Lane County in the past, and what part of Lane County's population, infrastructure, and environment have historically been vulnerable to each specific hazard. A profile of each hazard addressed in this plan is provided in the plan's hazard annexes. For a full description of the history of hazard specific events, please see the hazard specific annex.
- 3) **Vulnerability Assessment/Inventorying Assets** combines the hazard identification with an inventory of existing (or planned) property and population that would be exposed to a hazard. Critical facilities are of particular concern because they provide essential products and services that are necessary to preserve the welfare and quality of life in Lane County and fulfill important

public safety, emergency response, and/or disaster recovery functions.

- 4) ***Risk Analysis/Estimating Potential Losses*** involves estimating the damage, injuries, and financial losses likely to be sustained from hazard events in a geographic area over a given period of time. This level of analysis typically involved using mathematical models, such as HAZUS. The two measurable components of risk analysis are magnitude of the impact that may result from the hazard event and the likelihood of the hazard occurring. Describing vulnerability in terms of dollar losses provides the community and the state with a common framework in which to measure the effects of hazards on assets. Where available, the best available data was used to determine the magnitude and likelihood of future natural hazard events. For each hazard where data was available, quantitative estimates for potential losses are included in the hazard assessment.
- 5) ***Assessing Vulnerability/Analyzing Development Trends*** provides a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions. This plan provides a comprehensive description of the characteristics of Lane County in Section 2: Community Profile. This general description includes the geography and climate, population and demographics, employment and economics, land use and development, housing and community development, employment and industry, transportation and commuting patterns, and historic and cultural resources. Analyzing these components of Lane County can help in identifying potential issues or concerns, and can serve as a guide for incorporating the goals and ideas contained in this mitigation plan into other community development plans.

## **Risk Assessment Summary**

This section provides an overview of the risk assessments for the primary hazards affecting Lane County. The risk assessments were developed during Phases Two and Three of the County's mitigation planning process.

### **Earthquake Risk Summary**

Lane County has no occurrences of historic earthquakes centered within the county. However, the *State of Oregon's Natural Hazard Mitigation Plan's* Region 3 (which is comprised of Benton, Lane, Linn, Marion, Polk, and Yamhill counties) has had 5 historic earthquake events centered within the region with magnitudes of 4 or greater.<sup>1</sup> As part of a statewide effort to analyze county risk to various hazards, Lane County has developed an earthquake risk score for itself based on vulnerability and probability of a future earthquake event. Lane County rated itself as having an earthquake risk rating of 175 out of 240. This puts Lane County at an above average risk for earthquakes.<sup>2</sup> The State's hazard assessment identified Lane County's probability of

experiencing a future earthquake as low, that Lane County could expect to have one major earthquake event in the next 75 to 100 years. However, the State's hazard assessment evaluated the vulnerability of the county's population and assets to a future earthquake event as high.<sup>3</sup>

## **Flood Risk Summary**

Lane County has a long history of historic flood occurrences. Historic flooding events have occurred within Lane County in 1945, 1956, 1964, and in 1996. Caused by snow melts and heavy rains, the 1996 floods resulted in the evacuation of residents and damage to buildings, homes, vehicles, roads, and bridges.<sup>4</sup> Lane County rated itself as having an above average flood risk rating of 165 out of 240.<sup>5</sup> This rating is comparable to the state's flood risk assessment of Lane County. The State's hazard assessment indicates that the County's vulnerability to a future flood event is moderate. However, the State's hazard assessment estimated that Lane County was likely to have one major flooding event in the next 10 to 35 years, a high probability for a future flooding event.<sup>6</sup>

## **Landslides**

Landslide events have occurred recently in Lane County's history. The heavy rains that were responsible for the 1996 flood additionally caused landslides in Lane County. Heavy rains in 1998 and 2000 also resulted in landslides that caused road closures in the Deadwood area.<sup>7</sup> At this time neither the County nor the State have developed a rating for Lane County's risk to landslides. However, Lane County does have 24% of all reported landslides statewide. Additionally, the State's hazard assessment estimates that landslides on the local level can be expected every two to three years within Region 3.<sup>8</sup>

## **Wildfire**

Nineteen-ten, 1917, 1922, and 1929 all mark years of historic wildfire events within Lane County. More recently, 44,000 acres of Lane County burned during the 1966 Oxbow Fire.<sup>9</sup> Lane County's self-reported risk rating for wildfire is 180 out of 240. This means that Lane County indicated its vulnerability to, and probability for, wildfire as an above average risk.<sup>10</sup> The State's hazard assessment estimated that Lane County is likely to have a major wildfire in the next 10 to 35 years, a high probability for a future wildfire event. The State's hazard assessment also estimated that Lane County has a high vulnerability to a future wildfire event.<sup>11</sup> The County completed a very thorough risk assessment in spring of 2005. Please refer Lane County's Community Wildfire Protection Plan.

## **Windstorm**

Several historic windstorms, in 1971, 1990, 1995, and including the 1962 Columbus Day Storm, have affected the entire state of Oregon. Windstorms in 1997 and 2002 caused significant damage to western Oregon, including Lane County. Lane County has also experienced tornados in 1951, 1971, 1984, and 1989 that damaged buildings and uprooted trees.<sup>12</sup> The County has rated its own risk vulnerability and potential for windstorms as 190 out of 240, an above average risk to a future windstorm event.<sup>13</sup> The state's risk assessment estimated that Lane County is likely to have a major windstorm in the next 10 to 35 years, a high probability for a future windstorm event. The State's hazard assessment also estimated that Lane County has a high vulnerability to a future windstorm event.<sup>14</sup>

## **Winter Storm**

Winter storms may include windstorms, heavy snowstorms, and ice storms. Historic winter storms have occurred in 1950, 1969, 1980, 1992, 1993, and 1998 and caused damage to buildings, power outages, various accidents, and road closures across the state. During the 1969 storm, Eugene received 47 inches of snow.<sup>15</sup> Lane County has not rated its own risk to winter storm vulnerability and probability. The state's risk assessment estimated that Lane County is likely to have a major winter storm in the next 10 to 35 years, a high probability for a future winter storm event. The State's hazard assessment also estimated that Lane County has a high vulnerability to a future winter storm event.<sup>16</sup>

## **Secondary Hazards**

In addition to the primary hazards that affect Lane County, this plan also addresses the county's risk to secondary hazards: dam safety, hazmat incidents, terrorism, utility and transportation system disruptions, and volcanic hazards. Secondary hazards are those hazards that can affect Lane County, but have a lesser probability of occurrence than the primary hazards that affect the county. Complete risk assessment information on these secondary hazards can be found in hazard specific annexes.

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<sup>1</sup> State Interagency Hazard Mitigation Team. 2004. *State of Oregon Natural Hazard Mitigation Plan*.

<sup>2</sup> [http://mtjune.uoregon.edu/website/hazardmaps/webapp/hazardsViewer\\_content.html](http://mtjune.uoregon.edu/website/hazardmaps/webapp/hazardsViewer_content.html)

<sup>3</sup> State Interagency Hazard Mitigation Team. 2004. *State of Oregon Natural Hazard Mitigation Plan*.

<sup>4</sup> Goettel, Kenneth. 2003. *Lane County Risk Assessment*.

<sup>5</sup> [http://mtjune.uoregon.edu/website/hazardmaps/webapp/hazardsViewer\\_content.html](http://mtjune.uoregon.edu/website/hazardmaps/webapp/hazardsViewer_content.html)

<sup>6</sup> State Interagency Hazard Mitigation Team. 2004. *State of Oregon Natural Hazard Mitigation Plan*.

<sup>7</sup> Goettel, Kenneth. 2003. *Lane County Risk Assessment*.

<sup>8</sup> State Interagency Hazard Mitigation Team. 2004. *State of Oregon Natural Hazard Mitigation Plan*.

<sup>9</sup> Ibid.

<sup>10</sup> [http://mtjune.uoregon.edu/website/hazardmaps/webapp/hazardsViewer\\_content.html](http://mtjune.uoregon.edu/website/hazardmaps/webapp/hazardsViewer_content.html)

<sup>11</sup> State Interagency Hazard Mitigation Team. 2004. *State of Oregon Natural Hazard Mitigation Plan*.

<sup>12</sup> State Interagency Hazard Mitigation Team. 2004. *State of Oregon Natural Hazard Mitigation Plan*.

<sup>13</sup> [http://mtjune.uoregon.edu/website/hazardmaps/webapp/hazardsViewer\\_content.html](http://mtjune.uoregon.edu/website/hazardmaps/webapp/hazardsViewer_content.html)

<sup>14</sup> State Interagency Hazard Mitigation Team. 2004. *State of Oregon Natural Hazard Mitigation Plan*.

<sup>15</sup> Ibid.

<sup>16</sup> Ibid.