

LANE COUNTY HAZARD ANALYSIS

September 2007

BACKGROUND AND OVERVIEW

This hazard analysis methodology was first developed by the Federal Emergency Management Agency (FEMA) circa 1983, and gradually refined by Oregon Emergency Management (OEM) over the years.

The methodology produces scores that range from 24 (lowest possible) to 240 (highest possible). By applying one order of magnitude from lowest to highest, a hazard with a score of 240 is considered ten times more severe than a hazard with a rating of 24.

Vulnerability and probability are the two key components of the methodology. Vulnerability examines both typical and maximum credible events, and probability endeavors to reflect how physical changes in the jurisdiction and scientific research modify the historical record for each hazard. Vulnerability accounts for approximately 60% of the total score, and probability approximately 40%.

This method provides local jurisdictions with a sense of hazard priorities, or relative risk. It doesn't predict the occurrence of a particular hazard, but it does "quantify" the risk of one hazard compared with another. By doing this analysis, planning can first be focused where the risk is greatest. Among other things, this hazard analysis can:

- help establish priorities for planning, capability development, and hazard mitigation;
- serve as a tool in the identification of hazard mitigation measures;
- be one tool in conducting a hazard-based needs analysis;
- serve to educate the public and public officials about hazards and vulnerabilities; and
- help communities make objective judgments about acceptable risk.

For Lane County, this analysis allows comparison of the same hazard across various local jurisdictions; for example, the score for the windstorm or earthquake in central Lane County will differ from the score in coastal Lane County. Therefore, two hazard analyses are produced for Lane County due to the diversity of Lane County's geography.

In connection with Emergency Management Performance Grant funding administered by OEM, there is a requirement that hazard analyses must be current and updated within the past ten years, and include a written synopsis (narrative) of the most credible events possible to occur within a jurisdiction. Having a current local hazard analysis is also one element in meeting Oregon Progress Board Benchmark #67, "Emergency Preparedness."

In this analysis, *severity ratings* are applied to the four categories of history, vulnerability, maximum threat (worst-case scenario), and probability based as follows:

LOW = choose the most appropriate number between 1 to 3 points

MEDIUM = choose the most appropriate number between 4 to 7 points

HIGH = choose the most appropriate number between 8 to 10 points

Weight factors also apply to each of the four categories as shown below.

HISTORY (weight factor for category = 2)

History is the record of previous occurrences. Events to include in assessing history of a hazard event for which the following types of activities were required:

- The EOC or alternate EOC was activated;
- Three or more EOP functions were implemented, e.g., alert & warning, evacuation, shelter, etc.
- An extraordinary multi-jurisdictional response was required; and/or
- A "Local Emergency" was declared.

LOW – score at 1 to 3 points based on... 0 - 1 event past 100 years

MEDIUM – score at 4 to 7 points based on... 2 - 3 events past 100 years

HIGH – score at 8 to 10 points based on... 4 + events past 100 years

VULNERABILITY (weight factor for category = 5)

Vulnerability is the percentage of population and property likely to be affected under an "average" occurrence of the hazard.

LOW – score at 1 to 3 points based on... < 1% affected

MEDIUM – score at 4 to 7 points based on... 1 - 10% affected

HIGH – score at 8 to 10 points based on... > 10% affected

MAXIMUM THREAT (weight factor for category = 10)

Maximum threat is the highest percentage of population and property that could be impacted under a worst-case scenario.

LOW – score at 1 to 3 points based on... < 5% affected

MEDIUM – score at 4 to 7 points based on... 5 - 25% affected

HIGH – score at 8 to 10 points based on... > 25% affected

PROBABILITY (weight factor for category = 7)

Probability is the likelihood of future occurrence within a specified period of time.

LOW – score at 1 to 3 points based on... one incident likely within 75 to 100 years

MEDIUM – score at 4 to 7 points based on... one incident likely within 35 to 75 years

HIGH – score at 8 to 10 points based on... one incident likely within 10 to 35 years

By multiplying the *weight factors* associated with the categories by the *severity ratings*, we can arrive at a subscore for history, vulnerability, maximum threat, and probability for each hazard. Adding the subscores will produce a total score for each hazard.

The total score isn't as important as how it compares with the total scores for other hazards in Lane County. By comparing scores, we can determine priorities: Which hazards should the jurisdiction be most concerned about? Which ones less so?

HAZARD ANALYSIS MATRIX WORKSHEET

JURISDICTION: Lane County – Central

HAZARD	HISTORY WF=2	VULNERABILITY WF=5	MAXIMUM THREAT WF=10	PROBABILITY WF=7	TOTAL
Snow/Ice Storm	$10 \times 2 = 20$	$10 \times 5 = 50$	$10 \times 10 = 100$	$10 \times 7 = 70$	240
Flood	$10 \times 2 = 20$	$7 \times 5 = 35$	$5 \times 10 = 50$	$8 \times 7 = 56$	161
Windstorm	$10 \times 2 = 20$	$4 \times 5 = 20$	$4 \times 10 = 40$	$10 \times 7 = 70$	150
Wildfire	$10 \times 2 = 20$	$5 \times 5 = 25$	$5 \times 10 = 50$	$8 \times 7 = 56$	131
Domestic Terrorism	$9 \times 2 = 18$	$3 \times 5 = 15$	$4 \times 10 = 40$	$8 \times 7 = 56$	129
Landslide	$8 \times 2 = 16$	$2 \times 5 = 10$	$5 \times 10 = 50$	$4 \times 7 = 28$	104
HazMat Incident	$10 \times 2 = 20$	$2 \times 5 = 10$	$1 \times 10 = 10$	$8 \times 7 = 56$	96
Earthquake	$8 \times 2 = 16$	$4 \times 5 = 20$	$4 \times 10 = 40$	$2 \times 7 = 14$	90
Volcano	$1 \times 2 = 2$	$4 \times 5 = 20$	$3 \times 10 = 30$	$1 \times 7 = 7$	59

DATE: September 2007

WF = weight factor

PREPARED BY: Linda L. Cook, Emergency Manager

AGENCY: Lane County Sheriff's Office

HAZARD ANALYSIS MATRIX WORKSHEET

JURISDICTION: Lane County – Coastal

HAZARD	HISTORY WF=2	VULNERABILITY WF=5	MAXIMUM THREAT WF=10	PROBABILITY WF=7	TOTAL
Windstorm	0 x 2 = 0	10 x 5 = 50	10 x 10 = 100	10 x 7 = 70	240
Earthquake/Tsunami	0 x 2 = 0	7 x 5 = 35	10 x 10 = 100	4 x 7 = 28	191
Flood	10 x 2 = 20	7 x 5 = 35	5 x 10 = 50	8 x 7 = 56	161
Snow/Ice Storm	1 x 2 = 2	1 x 5 = 5	4 x 10 = 40	1 x 7 = 7	57
Domestic Terrorism	6 x 2 = 12	3 x 5 = 15	4 x 10 = 40	7 x 7 = 49	116
Landslide	8 x 2 = 16	5 x 5 = 25	6 x 10 = 60	10 x 7 = 70	171
HazMat Incident	10 x 2 = 20	2 x 5 = 10	1 x 10 = 10	8 x 7 = 56	96
Wildfire	1 x 2 = 2	2 x 5 = 10	2 x 10 = 20	2 x 7 = 14	46

DATE: September 2007

WF = weight factor

PREPARED BY: Linda L. Cook, Emergency Manager

AGENCY: Lane County Sheriff's Office

Lane County 2007 Hazard Analysis

Community Profile

Lane County is located in western Oregon and covers 4,554 square miles. For purposes of hazard analysis, Lane County can be divided into four major physiographic regions: the Coastal Region, the Coast Range Mountains, the southern Willamette Valley, and the Cascade Mountains.

The Coastal Region, in western Lane County, is characterized by sand dunes and other coastal features. This region is the only portion of Lane County subject to coastal hazards such as storm surge flooding and tsunamis.

The Coast Range, inland from the coast in western Lane County, is a relatively low population, heavily-forested area.

The Willamette Valley, in central Lane County, is the most heavily populated area and is characterized by flat or gently hilly topography.

The Cascade Range, in eastern Lane County, is a relatively low population area characterized by heavily forested slopes with elevations to over 10,000 feet (Three Sisters Peaks).

Lane County is one of only two counties in Oregon that reach from the Pacific Coast to the crest of the Cascades. The large size and geographic diversity of Lane County are important factors to consider in mitigation planning for natural and manmade hazards.

The first European settlers in the area arrived in Eugene and Springfield in 1846 and 1849, respectively. Eugene and Springfield were incorporated as cities in 1862 and 1885. Lane County is the fifth most populated county in Oregon, with a population of 337,870 (U.S. Bureau, 2006 estimate). The estimated population percent change was 4.6% between April 1, 2000 and July 1, 2006.

For emergency planning purposes, children, elderly adults, and people whose primary language is not English are generally considered vulnerable populations. Based on 2005 census data, Lane County has a substantial population of children and elderly adults, along with about 8% of the population whose primary language is not English. About 21% of the population are children less than 18 years old, while about 13.9% are adults over 65 years old.

The Census website (www.census.gov) has a vast amount of other demographic data for Lane County and for the individual cities within Lane County. See the website for additional demographic data, including school enrollment, educational levels, disability status, and many other categories of demographic data useful for planning purposes.

The Lane Council of Government's Region 2050 Study for the Southern Willamette Valley region covers about 90% of the population of Lane County, excluding areas west of the crest of the Coast Range. For this area, about 72% and 83% of the population live within cities or within Urban Growth Boundaries, respectively. Thus, only about 28% and 17% of the population live outside of cities and Urban Growth Boundaries, respectively.

Geography and Climate

Lane County includes areas with rather distinct geographic and climatic conditions. The Region 2050 profile (Lane Council of Governments, 2000) noted that the Eugene/Springfield area "offers a diversity of landscapes: broad valleys dotted with wetlands, rivers, lakes, and creeks lined with riparian vegetation, buttes, forests, mountains, foothills, parks and farms." This description applies to much of central Lane County.

The geography of the coastal portion of Lane County is dominated by beaches, dunes and other coastal features. The geography of the Coast Range and Cascades portions of Lane County consists of heavily forested mountains with numerous streams and rivers. Throughout Lane County, recreational opportunities abound, with water-based recreation on the coast and along the major rivers and lakes and a wide range of other outdoor activities in the hilly and mountainous portions of the County.

The climate for central Lane County is moderate. Mean daily temperatures range from highs of about 82 degrees and lows of about 51 degrees in July and August to highs of about 46 degrees and lows of about 34 or 35 degrees in December and January (Eugene data). The average annual rainfall is about 46 inches. Average monthly precipitation varies from about 7 to 8 inches in November through January to about 0.4 inch in July. Average annual snowfall is only about 6.0 inches.

The climate for coastal Lane County is moderated by the Pacific Ocean. Summer temperatures are lower than in central Lane County, while winter temperatures are higher. For example, in Florence (Honeyman State Park), mean daily temperatures range from highs of about 70 degrees and lows of about 50 degrees in July, August and September to highs of about 50 degrees and lows of about 38 degrees in December and January. The average rainfall is about 71 inches, with average annual snowfall of less than 1 inch.

At higher elevations in the Coast Range and in the Cascades, temperatures are typically lower, with higher amounts of precipitation. Average annual precipitation exceeds 120 inches per year in the Coast Range in northern Lane County and exceeds 80 inches per year in the Cascades. At locations near the crest of the Cascades, average annual snowfalls are near or above 300 inches.

Risk Assessment Summary

This section provides an overview of the risk assessments for the primary hazards affecting Lane County.

Snow/Ice Storm

This type of hazard is an atmospheric disturbance characterized by a strong wind and usually accompanied by rain, snow, sleet, hail, and often thunder or lightning. Also characteristic of this hazard is any heavy fall of snow, rain, or hail. Snow storms or blizzards, which are snow storms accompanied by high wind and/or drifting snow, occur occasionally in the area.

Hail storms occur when freezing water in thunderstorm type clouds accumulates in layers around an icy core. Wind added to hail can batter crops, structures and transportation systems.

An ice storm occurs when rain falls out of warm moist upper layer of atmosphere into a below freezing, drier layer near the ground. The rain freezes on contact with the cold ground and accumulates on exposed surfaces. If this is accompanied by wind, damage can occur to trees and utility wires.

Historic snow and ice storms have occurred in 1950, 1969, 1980, 1992, 1993, 1998 and 2003/04. These storms caused power outages, various accidents, road closures and damage to buildings. During the 1969 storm, the city of Eugene received 47 inches of snow. Most recently, Lane County was hit with a snow and ice storm in late December 2003 and early January 2004. Over a 24-hour period, Lane County received as much as 8 inches of snow in some areas of the valley floor and several feet of snow at elevations above 500 feet. Damages to public infrastructure in Lane County totaled nearly \$1.3 million. It is estimated that Lane County will have another major snow and ice storm in the next 10 to 35 years.

Central Lane County: Lane County has rated its own risk for snow/ice storm in Central Lane County as high with a score of 240 out of 240.

Coastal Lane County: Lane County has rated its own risk for snow/ice storm in Coastal Lane County as low with a score of 57 out of 240.

Flood

This hazard generally involves a rise in rivers or creeks resulting from heavy rain or rapid melting of the annual snow pack. Major flooding could also result from failure of a man-made structure constructed to restrict the flow of water such as a dam or levee. Lane County has numerous rivers and tributaries that could be subject to flooding and cause a threat to life, property and the environment.

Lane County has a long history of historic flood occurrences. Historic flooding events have

occurred within Lane County in 1945, 1956, 1964, 1996 and 1997. During the period of February 1996 through January 1997, Lane County and most Oregon counties were involved in three Presidential Disaster Declarations, resulting from 3 flooding events. Lane County was hit hard in 1996. As a result of snow melts and heavy rains, the 1996 floods caused the evacuation of residents and damage to buildings, homes, vehicles, roads, and bridges.

In addition there are nine dams inside the county and two in Linn County that help mitigate the flood hazard, yet even flood control efforts can cause hazardous conditions. In January of 2006 the city of Cottage Grove was threatened with flooding as a result of flow releases by the Army Corps of Engineers from the Dorena Lake Dam. During the same month the rural/unincorporated area of Cheshire was also threatened with flooding due to flow releases from the Fern Ridge reservoir dam, also a flood control effort by the Corps of Engineers. The flow releases were necessary because of heavy rains; flooding was localized and no significant property damage was reported.

Central Lane County: Lane County has rated its own risk for flood in Central Lane County as high with a score of 161 out of 240.

Coastal Lane County: Lane County has rated its own risk for flood in Coastal Lane County as high with a score of 161 out of 240.

Windstorm

This type of hazard is an atmospheric disturbance characterized by a strong wind and usually accompanied by rain, snow, sleet, hail and often thunder and lightning. The National Weather Service classifies wind from 38 to 55 MPH as gale force winds; 56 to 74 MPH as storm force winds and any winds over 75 MPH as hurricane force winds. Destructive winds like those described normally occur between October and March.

A tornado is violently rotating column of air, pendant from a cumuliform cloud or underneath a cumuliform cloud, and often (but not always) visible as a funnel cloud. Tornadoes are the most violent weather phenomena known. Their funnel shaped clouds rotating at velocities of up to 300 miles per hour generally affect areas of 1/4 to 3/4 of a mile wide and seldom more than 16 miles long. Tornadoes are produced by strong thunderstorms. Such thunderstorms can also produce large damaging hail, heavy amounts of rain, and strong damaging winds.

Several historic windstorms in 1997, 1995, 1990, 1971 and most notably the 1962 Columbus Day Storm, have affected the entire state of Oregon. Most recently, in February 2002 the strongest windstorm in several years came ashore in southwest Oregon resulting in extensive property and utilities damage as well as widespread loss of electrical service extending into the central Willamette Valley including Lane County.

Lane County has also experienced tornadoes in 1951, 1971, 1984, and 1989 that damaged buildings and uprooted trees.

Central Lane County: Lane County has rated its own risk for windstorm in Central Lane County as high with a score of 150 out of 240.

Coastal Lane County: Lane County has rated its own risk for windstorm in Coastal Lane County as high with a score of 240 out of 240.

Wildfire

A wildfire is a fire that burns uncontrollably in a natural setting (e.g., a forest, or grassland).

Nineteen-ten, 1917, 1922, and 1929 all mark years of historic wildfire events within Lane County. Nearly forty years ago, 44,000 acres of Lane County burned during the 1966 Oxbow Fire.

In spring of 2005 the county completed a comprehensive risk assessment as part of a Community Wildfire Protection Plan. The assessment findings include, but are not limited to the following. Please refer to Lane County's Community Wildfire Protection Plan for more details.

The risk assessment team divided the wildland-urban interface into five assessment areas. Assessment area boundaries were generally based on eco-regions within Lane County. In most cases the assessment areas followed watersheds, but in certain cases, expanding or altering natural watershed boundaries was necessary. The assessment areas include the following:

Area 1: Western Lane County / Coastal Region

This area is comprised of portions of the Alsea, Siltcoos and Siuslaw Watersheds. Population centers within the area include Florence, Glenada, Dunes City and Mapleton near the coast, and several smaller rural communities further inland along Highways 126 and 36. Overall fire risks within the area are moderate to low. The primary reason for this is a cool and damp coastal climate. The majority of residents within Area 1 live west of the summit of the Coast Range. With this region the number of days per season that forest fuels are capable of producing a major fire event are significantly fewer than in other parts of the county.

Area 2: Willamette Valley / Upper Siuslaw Watershed

Assessment Area 2 is the most highly developed and populated region within Lane County. The majority of the area falls within the Willamette Valley and includes portions of the Long Tom, Main Stem Willamette and Upper Siuslaw Watersheds. The majority of residents within the area live in the cities of Eugene, Veneta, Junction City or Coburg. Smaller communities include Lorane, Crow, Franklin, Cheshire, Noti Elmira, Lancaster and Alvadore. Risks are low on the valley floor and moderate with interspersed high-risk zones in the remainder of the area. Higher ignition occurrences and housing densities are the primary reasons for this.

Note: On September 8, 2007 a grass fire in the Alvadore area burned 100 acres of pasture in a neighborhood off Clear Lake Road but stopped short of damaging houses or killing livestock.

Area 3: Coast Fork Willamette / Umpqua Area

Located in Southern Lane County, this Assessment Area is comprised of portions of the Coast Fork Willamette and Umpqua Watersheds. Cottage Grove and Creswell are the major population centers in the area. Smaller communities include Dorena, Goshen, Saginaw, London and Culp Creek. Interface risks in Area 3 are moderate to low with exceptions in the Dorena / Culp Creek and London Areas. The majority of high-risk zones within the area fall outside the boundaries of a fire protection district.

Area 4: McKenzie River Watershed

Assessment Area 4 roughly follows the boundaries of the McKenzie Watershed. Springfield is the major urban center in the area. Several smaller communities and residential pockets are situated along Highway 126 to the east and Marcola Road to the north. Interface fire risks are moderate to high in this area. Extensive fuels, steep slopes and the presence of significant infrastructure all contribute to the increased risk.

Area 5: Middle Fork Willamette Watershed

Containing nearly the entire Middle Fork Willamette Watershed, Area 5 is the largest assessment unit within Lane County. Despite its size, less than half of the total land area within the region falls inside of the wildland urban interface zone. This is because much of the area is undeveloped land within the Willamette National Forest. Developed areas include Lowell, Dexter, Westfir, Oakridge, Pleasant Hill, Fall Creek Jasper and Trent. Wildfire risks are moderate to high with slope and vegetation hazard characteristics similar to those in Assessment Area 4. Additionally, lightning caused ignitions elevates overall risk in the southeastern portion of Area 5.

Central Lane County: Lane County has rated its own risk for wildfire in Central Lane County as moderate with a score of 131 out of 240.

Coastal Lane County: Lane County has rated its own risk for wildfire in Coastal Lane County as low with a score of 46 out of 240.

Domestic Terrorism

This hazard includes riots, protests, strikes, demonstrations or acts of terrorism which may result in taking of hostages, damage to property, looting, or sabotage and extortion. Such an event might include arson, bomb threats, and other unlawful activities identified above.

Lane County is at risk due to the Federal Building / Courthouse, University of Oregon and all levels of government in close proximity to each other. Increased protests, demonstrations and anarchist activity over the past several years in Lane County indicate a higher probability of future events occurring.

Coastal Lane County has a recurring past of riots associated with the Rhododendron Festival.

Central Lane County: Lane County has rated its own risk for domestic terrorism in Central Lane County as moderate with a score of 129 out of 240.

Coastal Lane County: Lane County has rated its own risk for domestic terrorism in Coastal Lane County as moderate with a score of 116 out of 240.

Landslides

The term landslide refers to the downward movement of masses of rock and soil. Landslides in this area are for the most part masses of soil ranging in volume from just a few feet, to many yards. The rate of travel of a slide can range from a few inches per month to many feet per second, depending on slope, material and water content. Landslides can be initiated by storms, earthquakes, fires, erosion, volcanic eruptions and by human modification of the land.

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. Lane County estimates that landslides on the local level can be expected every two to three years.

Central Lane County: Lane County has rated its own risk for landslides in Central Lane County as moderate with a score of 104 out of 240.

Coastal Lane County: Lane County has rated its own risk for landslides in Coastal Lane County as high with a score of 171 out of 240.

Hazardous Materials

This type of hazard includes the production, use, storage, transportation and disposal of hazardous substance and wastes that place the public, property and environment at significant risk. Illegal drug labs and drug dumping present yet another concern. Recent history shows an increased threat from terrorists in connection with hazardous materials.

Hazardous substances are any materials that pose a threat to human health and/or the environment, and any substance designated by the Environmental Protection Agency (EPA) to be reported if a designated quantity of the substance is spilled into the waters of the United States or is otherwise released into the environment.

Hazardous wastes are by-products of society that can pose a substantial or potential hazard to human health or the environment when improperly managed, that possess at least one of five characteristics (flammable, explosive, corrosive, toxic, or radioactive), or that appear on the EPA lists.

A hazardous chemical is any hazardous material requiring an MSDS (Material Safety Data Sheet) under OSHA's Hazard Communication Standard. Such substances are capable of producing fires and explosions or adverse health effects such as cancer, burns, or dermatitis.

In Lane County there are 1,822 facilities reporting hazardous materials with 8 of them being identified as Extremely Hazardous Substance (EHS) facilities.

Incidents involving the release of hazardous materials may occur during handling at industrial facilities or during the transportation of such materials by rail or highway. In 2005 Lane County reported 13 incidents according to the 2005 Annual Report of Hazardous Materials Incidents in Oregon published the State Fire Marshal's Office.

Burlington Northern Railroad's mainline carries thousands of rail cars through the county annually.

The network of roadways in Lane County makes nearly all areas of the county vulnerable to a hazardous materials incident. Virtually all primary and secondary roads experience daily transport of hazardous materials. To illustrate the vulnerability of nearly all areas of the county, the following text taken from Wikipedia describes a major transportation route through Lane County, Oregon Route 126.

Oregon Route 126 begins in Prineville, with its intersection with US 26. It travels westward, across the high desert into the Cascades, passing the town of Sisters. It shares a segment with U.S. Route 20, but then turns southward through the McKenzie River Valley, offering views of farms and forest, as well as hydroelectric dams which provide power to Lane County residents. Then, Oregon Route 126 enters the Eugene-Springfield metropolitan area, first passing westward through Springfield, and at a T-intersection, heads in a northwestward loop, becoming the Eugene-Springfield Highway, a limited-access freeway. After the interchange with Interstate 5, Oregon Route 126 is also marked Interstate 105, a spur of I-5. This is also where Oregon Route 126 enters Eugene. After two exits (the second of which is for the Delta Highway), the freeway comes to a halt, ending at an interchange with Oregon Route 99. Oregon Route 126 turns west along Oregon Route 99 northbound, but quickly separates, and exits Eugene at its western edge, with an intersection with the Belt Line Road. A railroad branch line completed in 1914 parallels the highway for much of it's length. West of Eugene, Oregon Route 126 continues through farmland, passes along Fern Ridge Reservoir (completed 1941) and crosses the Coast Range, the highest point occurring at milepost 30, Cougar Pass, elevation 800 ft. This crossing marks the dividing line between the watersheds of the Willamette and Siuslaw rivers. The two-lane highway winds through the forested valleys first following Wildcat Creek and then the Siuslaw River. The Petersen tunnel built in 1957 completed the Eugene to Florence route of 126 to western terminus, in the coastal community of Florence, Oregon.

(source: Wikipedia. Oregon Route 126)

Central Lane County: Lane County has rated its own risk for hazardous materials incidents in Central Lane County as moderate with a score of 96 out of 240.

Coastal Lane County: Lane County has rated its own risk for hazardous materials incidents in Coastal Lane County as moderate with a score of 96 out of 240.

Earthquake – Tsunami

Historically, awareness of seismic risk in Oregon has generally been low, among both the public at large and public officials. This low level of awareness reflected the low level of seismic activity in Oregon, at least in recent historical time. However, over the past several years, awareness of seismic risk in Oregon has significantly increased. Factors in the increased awareness include the 1993 Scotts Mills earthquake in Clackamas County, widespread publicity about possible large magnitude earthquakes on the Cascadia Subduction Zone, and recent changes in Seismic Zonation in the Oregon Building Code which increased seismic design levels for new construction in western Oregon.

Of greatest concern to Lane County is the Cascadia Subduction Zone off the Pacific Coast. This is where the Juan de Fuca plate meets the North American plate. This meeting has created an 800 mile long earthquake fault on the ocean floor that stretches from the Brooks Peninsula on Vancouver Island to Cape Mendocino in northern California. Earthquakes generated along this fault have far more widespread effects than other types of quakes in the region. Also of concern is the potential for a tsunami as a result of a quake along this subduction zone.

Earthquake-induced movement of the ocean floor most often generates tsunamis. If a major earthquake or landslide occurs close to shore, the first wave in a series could reach the beach in a few minutes, even before a warning is issued. Areas are at greater risk if they are less than 25 feet above sea level and within a mile of the shoreline. Drowning is the most common cause of death associated with a tsunami. Tsunami waves and the receding water are very destructive to structures in the run-up zone. Other hazards include flooding, contamination of drinking water, and fire from gas lines or ruptured tanks.

All tsunamis are potentially dangerous, even though they may not damage every coastline they strike. A tsunami can strike anywhere along most of the U.S. coastline. The most destructive tsunamis have occurred along the coasts of California, Oregon, Washington, Alaska, and Hawaii.

Central Lane County: Lane County has rated its own risk for earthquake - tsunami in Central Lane County as moderate with a score of 90 out of 240.

Coastal Lane County: Lane County has rated its own risk for earthquake - tsunami in Coastal Lane County as high with a score of 191 out of 240.

Volcano

In the Pacific Northwest there is a 1,000-mile-long chain of volcanoes, the Cascade Range, which extends from northern California to southern British Columbia. Seven of those volcanoes have erupted in the past 230 years. These include Mount Baker, Glacier Peak, Mount Rainier, Mount St. Helens, Mount Hood, Mount Shasta, and Lassen Peak. These and many others could erupt again. Many people do not consider the Cascade volcanoes to be hazardous because the time between eruptions is often measured in centuries or millennia, and volcanic activity is not part of our everyday experience. However, the destruction caused by the 1980 eruption of Mount St. Helens reminds us of what can happen when they do erupt

The Central Cascades extend from Mount Jefferson in the north to Diamond Peak in the south. The most active volcanoes in this stretch have been Three Sisters and Newberry. The last eruptive period in the Three Sisters area was 1000-2000 years ago. The most recent eruption (Big Obsidian Flow) in Newberry was 1300 years ago. Recently ground uplift (bulge) and anomalous water chemistry have been recorded west of Three Sisters. Because there are no written chronicles of past major eruptions, most of our information about the Central Cascades past comes from geologic study of deposits produced during those eruptions. We also use observations of recent eruptions at other similar volcanoes around the world to help us understand how future eruptions of the Central Cascades volcanoes may develop and to help delineate areas that are likely to be at risk during future eruptions.

According to a volcano hazards map developed by the USGS, the McKenzie River valley is a primary lahar hazard zone - almost all the way to Springfield. Besides impacts from a lahar, ash fall from easterly winds during a Central Cascades event could certainly pose a hazard for Lane County.

Central Lane County: Lane County has rated its own risk for volcano hazard in Central Lane County as low with a score of 59 out of 240.

Coastal Lane County: Lane County does not consider Coastal Lane County at risk from a volcano hazard.