



Hazard Analysis for DOUGLAS COUNTY Oregon

February 2008

**BEFORE THE DOUGLAS COUNTY BOARD OF COMMISSIONERS
STATE OF OREGON, COUNTY OF DOUGLAS**

In the matter of recognizing the)
document titled "Douglas County)
Hazard Analysis", dated February 2008)

WHEREAS, it is necessary to develop a thorough analysis of the natural and man-made hazards which could affect the county; and

WHEREAS, this analysis is an important step in planning for hazard mitigation, response and recovery actions; and

WHEREAS, Douglas County has determined that there is a need for in-depth emergency planning in order to protect lives and property;

NOW, THEREFORE, BE IT HEREBY RESOLVED that the Douglas County Board of Commissioner recognizes the document titled "Douglas County Hazard Analysis" dated February 2008.

Adopted this _____ day of _____, 2008

Signed this 5th day of March, 2008

REVIEWED AS TO CONTENT

By [Signature]
Douglas County Sheriff
Date 2/27/2008

REVIEWED AS TO CONTENT

By [Signature]
Douglas County Health
Date 02-25-08

REVIEWED AS TO FORM

By [Signature]
Office of County Counsel
Date 2/3/2008

BOARD OF COUNTY COMMISSIONERS
OF DOUGLAS COUNTY, OREGON

By [Signature]
Chair

By [Signature]
Commissioner

By [Signature]
Commissioner

TABLE OF CONTENTS

Background and Description 1

Geographic Description..... 2

History of Disasters 3

Hazard Analysis Process 4

Hazard Definitions 4

Hazard Analysis Criteria 4

Central Douglas County Hazard Analysis 6

Coastal Douglas County Hazard Analysis 10

Douglas County Health Hazard Analysis..... 14

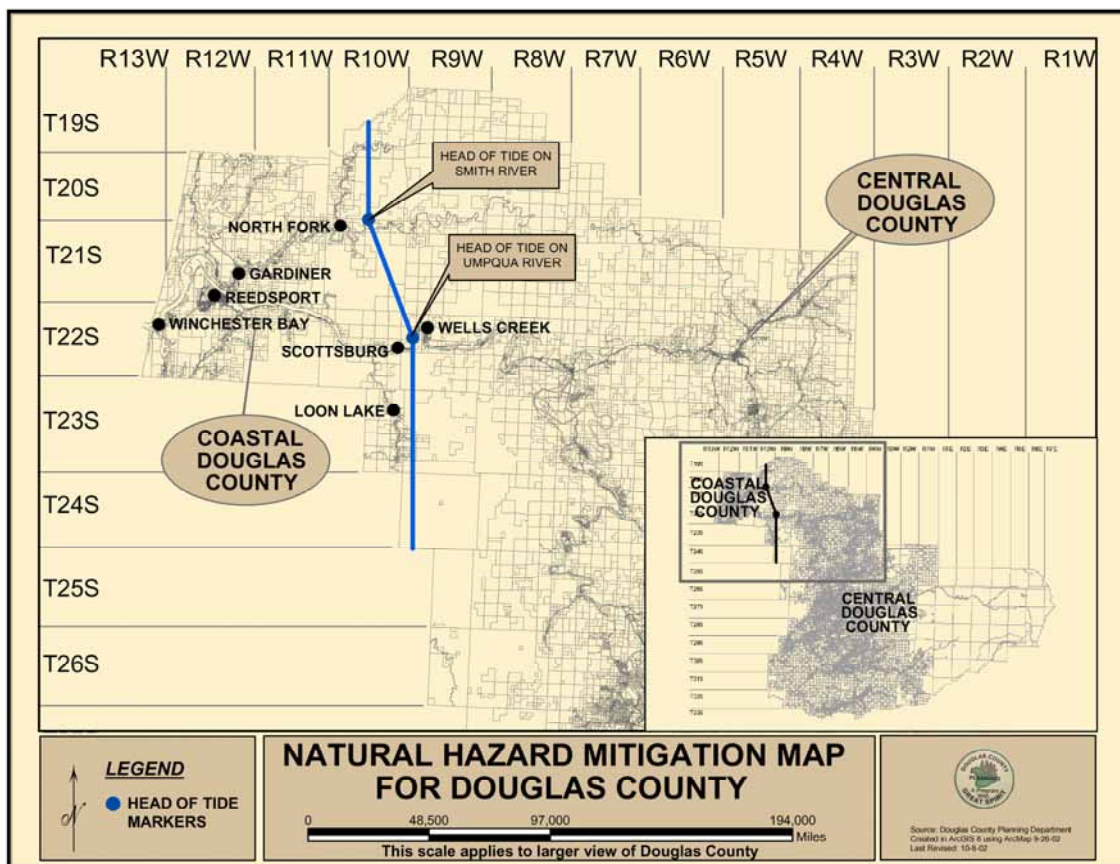
Documentation 17

References 18

BACKGROUND AND DESCRIPTION

The Douglas County Hazard Analysis was first developed in July 1984, by a joint effort of the Douglas County Sheriff's Office, Emergency Management Division and the Douglas County Planning Department. The process was revised in February 1991, June of 1995, and March 2003.

The 2003 revision and this 2008 update, established two separate analyses: one document covers the central portion of Douglas County (east from a point near of Scottsburg) and is called the Central Douglas County Hazard Analysis. The other analysis covers the coastal section of Douglas County (from the coast to a point just west of Scottsburg) and is called the Coastal Douglas County Hazard Analysis. The dividing line for the two sections is essentially the head of tide of both the Smith River and the Umpqua River (see map below).



The separation of the coastal from the central hazard analysis was done after a review of the hazard ratings. We found that coastal hazards were severe to the coastal population, but ended up with almost no ranking due to the population from the central area that were not at risk, thus skewing the ranking in favor of only the central area.

This 2008 update also contains a Public Health Vulnerability Assessment (PHVA) which was reviewed by community health partners. The PHVA includes hazard values for potential health hazards that state and local health departments have determined to have a potential negative impact on the health of the citizens in the state. The PHVA adopted the same total scores for natural hazards that were determined by the Douglas County Emergency Management review process.

A hazard analysis is a planning process that is essential to insure effective mitigation of hazards and efficient recovery from events. A hazard is viewed as a situation or event having the potential for doing damage to life, property, resources, and the environment. The hazard analysis provides information, assists in management decisions, and is designed to encourage local government to meet previously unmet emergency management procedures. Further, a hazard analysis strives to raise the level of understanding of local officials and citizens in the area of measures to prevent or mitigate hazard events.

It is the intent of this document to report findings, rank hazards and provide quantitative information for future emergency management program decisions.

GEOGRAPHIC DESCRIPTION

Douglas County is located in Southwest Oregon and runs from the Pacific Ocean to the crest of the Cascade Mountain Range. Douglas County comprises 3,240,360 acres (5,071 square miles) and is the fifth largest county in Oregon. Timberlands, farm forest and agricultural lands comprise 98% of the county, of which 50% is owned by the federal government. Residential, industrial or land within urban growth boundaries make up the other 2% of land within Douglas County. Approximately 25-30% of the labor force is employed in the forest products industry. The population of Douglas County is 104,675 (Per Portland State CPRC projections) (coastal section population 6,413 and central county section population 98,262). The county seat is Roseburg which is centrally located in the central valley of the county, with a population of 21,255, it is the largest city in the county. Over one-half of the county population lives outside of the 12 incorporated cities.

Douglas County is traversed by Interstate 5 and the Central Oregon & Pacific Railroad in a north south direction. Other major highways in Douglas County are State Highways 38, 42, 99, 138, and County Road 1. The boundaries of the county coincide with the Umpqua Basin Watershed. The Umpqua River System runs throughout the county and often parallel to the major road network. The largest collections of population are also along or near the road and river network.

Douglas County is part of four geologic provinces which are characterized by complex and rugged topography, unique soils groups, deep and narrow valleys, which impact all activities of residents of the county. The physical setting of the county plays an important role in the hazard analysis process.

The county is bordered on the west by Coos County and the Pacific Ocean; to the north by Lane County; Klamath County to the east; and Josephine and Jackson counties to the south. Major cities in the region are Roseburg; Eugene, seventy miles to the north and Medford, ninety miles to the south, both out of the county.

History of Disasters (Presidential Declared Disasters)

1994 El Nino FEMA 1036-DR

1995 Windstorm FEMA 1107-DR

\$ 64,340 damages to public facilities

\$ 50,422 damages to private homes

\$ 64,600 in Small Business Administration loans

1996 Winter Storm FEMA 1149-DR

Over \$1 million in damages to public facilities

1996 Winter Storm FEMA 1099-DR

1997 Winter Storm FEMA 1160-DR

2002 Windstorm – FEMA 1405-DR

\$ 574,748 damages to public facilities

2004 Winter Storm – FEMA 1510-DR

\$ 101,972 damages to public facilities (Public Utilities Damages)

\$ 39,410 Debris Clearing

2004 Wildfire – FEMA-OR-FM2549

2006 Winter Storm – FEMA 1632-DR

HAZARD ANALYSIS

The process of assigning numeric scores to hazards can seem simple, but when applied to a diverse land area such as Douglas County can be difficult. Tsunami, for example; past history for a tsunami reflects it would be a high rating, but the population it would affect both in vulnerability and maximum threat brings the score down. This does not mean that the risk is not high, it just does not rate as high because of comparing it across the entire county population, which is located primarily in the interior valley area. Another example is mass casualty; even though the number of residents potentially affected by a mass casualty incident is low, the overloading of the entire county emergency medical system can be caused by a relatively small number of patients. A motor vehicle accident involving a 15 passenger van could overload the local system.

The numeric score is not as important as how it compares with the scores for other hazards we face. By comparing scores, can we determine priorities? Which hazards should we be most concerned about? Which ones less so? By completing this process should we focus planning on the higher rated hazards? We need to be cautious if just going by the numbers. For example, a snowfall event has a higher score than a landslide, but it is not that simple: significant snowfall may cause serious problems during the time that the snow is on the ground, but the long range recovery is significantly higher for a landslide than would be for a snowfall event.

HAZARD DEFINITIONS

All areas of Douglas County may be subject to the effects of man-caused or natural disasters/emergencies. Disaster/emergency is defined as any man-caused or natural event or circumstance causing or threatening loss of life, injury to persons or property, human suffering or financial loss, and includes, but is not limited to, fire, explosion, flood, severe weather, drought, earthquake, volcanic activity, spills or releases of oil or hazardous material, contamination, utility or transportation emergencies, disease, blight, infestation, crisis influx of migrants unmanageable by the county, civil disturbance, riot, sabotage and war.

HAZARD ANALYSIS CRITERIA

In analyzing the risk posed by specific hazards, a rating criteria and weighting factor have been used. This formula is based on point value in which:

Low	=	1 - 3 point range, generally an average of 2 was used
Medium	=	4 - 6 point range, generally an average of 5 was used
High	=	7 - 10 point range, generally an average of 8 was used

Event History is based on the number of previous disasters/emergencies. Examples of events to include in assessing history of a hazard were those events for which the following activities were required:

- ▶ The EOC (or alternate) was activated;
- ▶ Activation/implementation of three or more EOP functions (Warning, Communications, Emergency Public Information, Evacuation etc.);
- ▶ A multi-jurisdictional response was required;
- ▶ A unified command structure was necessary to coordinate response;
- ▶ A "Local Declaration of Emergency" was made.

Weighting Factor is 2.

Low	=	0 -1 events per 100 years
Medium	=	2 -3 events per 100 years
High	=	4 + events per 100 years

Vulnerability is based on the percentage of population or property likely to be affected.

Weighting Factor is 5.

Low	=	< 1% affected
Medium	=	1 -10% affected
High	=	> 10% affected

Maximum Threat is based on the percentage of population and property that could be impacted under a worst case scenario. *Weighting Factor is 10.*

Low	=	< 5% could be affected
Medium	=	5 - 25% could be affected
High	=	> 25% could be affected

Probability is based on the likelihood of an occurrence within a specified period of time.

Weighting Factor is 7.

Low	=	At least 1 event within a 100 year period
Medium	=	At least 1 event within a 50 year period
High	=	At least 1 event within a 10 year period

HAZARD ANALYSIS MATRIX

Central County Section

HAZARD	Severity Rating	History	Vulnerability	Maximum Threat	Probability	Total Score
		WF-2	WF-5	WF-10	WF-7	
FLOOD	Rating Subscore	$\underline{2} \times 10$ = 20	$\underline{5} \times 8$ = 40	$\underline{10} \times 5$ = 50	$\underline{7} \times 10$ = 70	180
WILDFIRE	Rating Subscore	$\underline{2} \times 10$ = 20	$\underline{5} \times 8$ = 40	$\underline{10} \times 5$ = 50	$\underline{7} \times 10$ = 70	180
EARTHQUAKE	Rating Subscore	$\underline{2} \times 2$ = 4	$\underline{5} \times 10$ = 50	$\underline{10} \times 10$ = 100	$\underline{7} \times 3$ = 21	175
WIND	Rating Subscore	$\underline{2} \times 8$ = 16	$\underline{5} \times 6$ = 30	$\underline{10} \times 6$ = 60	$\underline{7} \times 8$ = 56	162
SNOW FALL	Rating Subscore	$\underline{2} \times 5$ = 10	$\underline{5} \times 7$ = 35	$\underline{10} \times 7$ = 70	$\underline{7} \times 5$ = 35	150
HAZ/MAT	Rating Subscore	$\underline{2} \times 7$ = 14	$\underline{5} \times 5$ = 25	$\underline{10} \times 6$ = 60	$\underline{7} \times 6$ = 42	141
LANDSLIDE	Rating Subscore	$\underline{2} \times 10$ = 10	$\underline{5} \times 4$ = 20	$\underline{10} \times 3$ = 30	$\underline{7} \times 9$ = 63	123
PIPELINE DISRUPTION	Rating Subscore	$\underline{2} \times 3$ = 30	$\underline{5} \times 5$ = 25	$\underline{10} \times 5$ = 50	$\underline{7} \times 5$ = 35	116
MASS CASUALTY	Rating Subscore	$\underline{2} \times 5$ = 10	$\underline{5} \times 2$ = 10	$\underline{10} \times 3$ = 30	$\underline{7} \times 7$ = 49	99
DAM FAILURE	Rating Subscore	$\underline{2} \times 1$ = 2	$\underline{5} \times 5$ = 25	$\underline{10} \times 2$ = 20	$\underline{7} \times 2$ = 14	61

WF = weight factor

Central Douglas County Hazard Analysis

Flood

180

There are over 320 miles of river or major streams that flow through Douglas County. Best estimate is that there are approximately 24,396 acres of land in the floodplain in the county, with at least a portion of most population centers located within the flood plain. Floods occurred in 1861, 1890, 1893, 1907, 1909, 1927, 1931, 1942, 1945, 1948, 1950, 1953, 1955, 1956, 1958, 1961, 1964, 1971, 1974, 1981, 1983, and 1996 representing moderate to major flooding.

An estimated 7,700 people live in the floodplain in the central county area. This is about 7% of the population.

Wildland Fire

180

The major threat of fire in Douglas County comes from the wildland/urban interface fires. With continued building in the interface zone, combined with the popularity of the rural lifestyle, the threat of wildland interface fires will increase. The other threat comes from the vast amount of forest land in the county. In lands protected by Douglas Forest Protective Assn. (majority of interface lands in the Central area) Douglas County has averaged 101 fires per year since 1956.

Despite the fact that the county EOC has not been activated for wildfire, each year forest fire fighting agencies have activated their respective response and command systems. These wildfires have not caused large numbers of evacuations, but the potential and conditions for a catastrophic wildfire exist each year.

Earthquake

175

An understanding of the history of earthquakes in Oregon is relatively new. Recent quakes in Oregon were the March 1993, (Moment Magnitude – see pg. 20) Mw5.6 Scotts Mills quake and the Sept. 1993 Mw6.0 and Mw5.9 Klamath County quakes. Despite their relatively small size and rural epicenters, both caused property damage. The greatest risk from earthquakes would be from an offshore subduction zone earthquake, with that maximum credible event ranging from Mw8.0 to Mw9.5 depending on how much of the zone ruptures at once. This type of event would equate, most likely, to a Mw6.0 to Mw6.5 in the Roseburg area (this would only be an estimate dependent upon location of quake, size, soil conditions, etc.). Other reports estimate earthquake recurrence intervals range from 340 to 590 years; the last large quake was about 300 years ago, placing the probability of another event in the next 50 years at 10 to 20 percent.

Oregon Department of Geology and Mineral Industries

Special Paper 29, Earthquake Damage in Oregon, 1999 estimates that a 8.5 Cascadia subduction zone event would injure 151 people, displace 255 households, create \$275 million in economic loss to buildings and disable about 50% of critical facilities (police and fire stations, schools, and bridges) in Douglas County.

There is really no past recent history of earthquakes in Douglas County. Earthquakes some distance from Douglas County have been felt by county residents. Even with this lack of history, geology clearly shows that the county has been impacted by significant events in the last 500 years. It is this 500 year history that Oregon Department of

Geology and Mineral Industries based the 1999 damage estimates on. The State of Oregon increased building code requirements for western Oregon in 1993 from a seismic zone 2b to 3 for the area in the Central County.

Wind **162**

This hazard generally involves wind storms, which result in area-wide or localized loss of life, property, power, or other service disruption. The variable character of this hazard is determined by a variety of meteorological factors. January 1880, January 1921, April 1931, November 1951, December 1951, November 1958, October 1962, March 1963, December 1995 and February 2002 were all listed as "exceptionally destructive wind storms."

Snow **150**

This hazard generally involves severe snow or ice or storms, which result in area-wide or localized loss of life, property, power, or other service disruption. The variable character of this hazard is determined by a variety of meteorological factors including snowfall, snowpack, rainfall, temperature, and wind. Years 1969, 1971 and 1989 brought exceptional amounts of snowfall to valley areas.

Hazardous Material Spills **141**

With Oregon's spill reporting requirements, any type of spilled petroleum products are required to be reported. The hazard from the use of products which pose a threat to life, property and the environment is continually increasing. Products, which are used in all facets of daily living and manufacturing are becoming increasingly complex and varied; these often are harmless in their original state but become dangerous when altered by fire, water, heat, air, etc. Spills involving release of hazardous material can occur during any stage of packaging, shipping, use or disposal.

- 1997 70 spills reported to OERS
- 1998 89 reports, 1 which required a Haz/Mat team response.
- 1999 46 reports, 1 which required a team response.
- 2000 50 reports, 1 which required a team response.
- 2001 53 reports, 1 which required a team response
- 2002 No data available
- 2003 48 reports
- 2004 51 reports
- 2005 57 reports
- 2006 38 reports
- 2007 55 reports

Source: Oregon Emergency Response System (OERS)

Haz/Mat reports cover a broad range of events; sewage spills, petroleum product spills (ranging from 1 gallon to hundreds of gallons), sheens of oil on waterways, unknown substances and many others. None of the above incidents required an EOC activation or evacuation of residents.

Landslide **123**

An estimated 2400 people live in a potential landslide hazard area in the Central County area. This is about 2.5% of the population.

Gas Pipeline Failure**116**

This area of concern is a "what if." What if a large area of the county were to lose power for a period of time during the winter months? What if, as it has happened twice in the last 10 years, the main supply natural gas line were to break or the system have a failure? The only natural gas supply in the county is Northwest Pipeline Corp. which operates a ten inch transmission line in the central area (north to south). What if power was disrupted for an extended period of time during the winter months? In the last 10 years we have experienced 2 major outages that effected all of central Douglas County; fortunately those outages only lasted one to two hours. With Douglas County rapidly becoming a retirement community, utility failures during inclement weather could pose serious consequences.

According to Avista Utilities (May 2002 data) there were 11,520 residential natural gas users.

Mass Casualty**99**

This potential hazard would be for situations where large numbers of people were to be injured. These situations, for example, could be bus accidents, multiple vehicle accidents, residential area air crash, spectator events where large number of people are gathered, etc.

Dam Failure**61**

In reportable history there have been no dam failures in Douglas County. Within the county there are eight dams that could have adverse downstream effects if a catastrophic failure were to occur. The consequence of a catastrophic failure of one of these dams would have similar impacts as a major flood.

HAZARD ANALYSIS MATRIX

Coastal Section

HAZARD	Severity Rating	History	Vulnerability	Maximum Threat	Probability	Total Score
		WF-2	WF-5	WF-10	WF-7	
EARTHQUAKE	Rating	<u>2</u> X 2	<u>5</u> X 10	<u>10</u> X 10	<u>7</u> X 5	189
	Subscore	=4	=50	=100	=35	
FLOOD	Rating	<u>2</u> X 8	<u>5</u> X 6	<u>10</u> X 6	<u>7</u> X 10	176
	Subscore	=16	=30	=60	=70	
TSUNAMI	Rating	<u>2</u> X 8	<u>5</u> X 5	<u>10</u> X 6	<u>7</u> X 10	171
	Subscore	= 16	= 25	= 60	= 70	
LANDSLIDE	Rating	<u>2</u> X 8	<u>5</u> X 5	<u>10</u> X 6	<u>7</u> X 10	171
	Subscore	= 16	= 25	= 60	= 70	
WIND	Rating	<u>2</u> X 8	<u>5</u> X 6	<u>10</u> X 6	<u>7</u> X 8	162
	Subscore	= 16	= 30	= 60	= 56	
WILDFIRE	Rating	<u>2</u> X 7	<u>5</u> X 8	<u>10</u> X 5	<u>7</u> X 8	160
	Subscore	= 14	= 40	= 50	= 56	
HAZ/MAT	Rating	<u>2</u> X 7	<u>5</u> X 5	<u>10</u> X 6	<u>7</u> X 6	141
	Subscore	= 14	= 25	= 60	= 42	
MASS CASUALTY	Rating	<u>2</u> X 2	<u>5</u> X 2	<u>10</u> X 3	<u>7</u> X 7	93
	Subscore	= 4	= 10	=30	= 49	
	Rating	<u>2</u> X	<u>5</u> X	<u>10</u> X	<u>7</u> X	
	Subscore	=	=	=	=	
	Rating	<u>2</u> X	<u>5</u> X	<u>10</u> X	<u>7</u> X	
	Subscore	=	=	=	=	

WF = weight factor

Coastal Douglas County Hazard Analysis

Earthquake

189

An understanding of the history of earthquakes in Oregon is relatively new. Recent quakes in Oregon were the March 1993 Mw5.6 Scotts Mills quake and the Sept. 1993, Mw6.0 and Mw5.9 Klamath County quakes. Despite their relatively small size and rural epicenters, both caused property damage. The greatest risk from earthquakes would be from an offshore subduction zone earthquake, with that maximum credible event ranging from Mw8.0 to Mw9.5 depending on how much of the zone ruptures at once. This type of event would equate, most likely, to a Mw6.0 to Mw6.5 in the Roseburg area (this would only be an estimate dependent upon location of quake, size, soil conditions, etc.). Other reports estimate earthquake recurrence intervals range from 340 to 590 years; the last large quake was about 300 years ago, placing the probability of another event in the next 50 years at 10 to 20 percent.

Oregon Department of Geology and Mineral Industries

Special Paper 29, Earthquake Damage in Oregon, 1999 estimates that a 8.5 Cascadia subduction zone event would injure 151 people, displace 255 households, create \$275 million in economic loss to buildings and disable about 50% of critical facilities (police and fire stations, schools, and bridges) in Douglas County.

There is really no past recent history of earthquakes in Douglas County. Some earthquakes that occurred some distance from Douglas County have been felt by county residents. Even with this lack of history, geology clearly shows that the county has been impacted by significant events in the last 500 years. It is this 500 year history that Oregon Department of Geology and Mineral Industries based the 1999 damage estimates on. The State of Oregon increased building code requirements for western Oregon in 1993 from a seismic zone 2b to 3 and in 1998 in the coastal area of Oregon to a zone 4 requirement for commercial and multifamily buildings.

Flood

176

There are over 320 miles of river or major streams that flow through Douglas County. Best estimate is that there are approximately 24,396 acres of land in the floodplain in the county, with at least a portion of most population centers located within the floodplain. Floods occurred in 1861, 1890, 1893, 1907, 1909, 1927, 1931, 1942, 1945, 1948, 1950, 1953, 1955, 1956, 1958, 1961, 1964, 1971, 1974, 1981, 1983, and 1996 representing moderate to major flooding.

An estimated 665 people live in the floodplain in the Coastal County area. This is about 7% of the population.

Tsunami

171

Tsunamis potentially impacting Douglas County would occur as a result of large earthquakes offshore, or from distant large earthquakes such as those near the Gulf of Alaska and the Aleutian Islands. Tsunami modeling is difficult, for one must predict where and what size event would occur to produce the tsunami. Some predictions show that a major subduction zone earthquake Mw 8.8 would produce 20 to 30 meter tsunamis at the mouth of the Umpqua River.

An estimated 288 people reside in the Tsunami Inundation Zone. This is about 3% of the population of the coastal area.

Landslide 171

An estimated 360 people live in a potential landslide hazard in the coastal county area. This is about 3.8% of the population.

Wind Storm 162

This hazard generally involves wind storms, which result in area-wide or localized loss of life, property, power, or other service disruption. The variable character of this hazard is determined by a variety of meteorological factors. January 1880, January 1921, April 1931, November 1951, December 1951, November 1958, October 1962, March 1963, December 1995 and February 2002 were all listed as "exceptionally destructive wind storms."

Wildland Fire 160

The major threat of fire in Douglas County comes from the wildland/urban interface fires. With continued building in the interface zone, combined with the popularity of the rural lifestyle, the threat of wildland interface fires will increase. The other threat comes from the vast amount of forest land in the County. As of the publication date of this document, statistics were not available for the breakdown of the number of fires in the coastal area of Douglas County.

Despite the fact that the County EOC has not been activated for wildfire, each year forest fire fighting agencies have activated their respective response and command systems. Coastal area wildfires have not been of the magnitude and frequency of those in the Central area. Conditions do exist for large wildfires each year.

Hazardous Material (Haz/Mat) Spills 141

With Oregon’s spill reporting requirements, any type of spilled petroleum products are required to be reported. The hazard from the use of products which pose a threat to life, property and the environment is continually increasing. Products, which are used in all facets of daily living and manufacturing are becoming increasingly complex and varied; these often are harmless in their original state but become dangerous when altered by fire, water, heat, air, etc. Spills involving release of hazardous material can occur during any stage of packaging, shipping, use or disposal.

- 1997 9 spills reported to OERS
- 1998 26 reports, 1 which required a Haz/Mat team response.
- 1999 27 reports, 1 which required a team response.
- 2000 7 reports, 6 which required a team response.
- 2001 18 reports, 2 which required a team response
- 2002 No data available
- 2003 15 reports
- 2004 16 reports
- 2005 14 reports
- 2006 25 reports
- 2007 7 reports

Source Oregon Emergency Response System (OERS)

Haz/Mat reports cover a broad range of events; sewage spills, petroleum product spills (ranging from one gallon to hundreds of gallons), sheens of oil on waterways, unknown substances and many others. None of the incidents noted above required an EOC activation or evacuation of residents.

Mass Casualty**93**

This potential hazard would be for situations where large numbers of people were to be injured. These situations, for example, could be bus accidents, multiple vehicle accidents, residential area air crash, spectator events where large number of people are gathered, etc.

HAZARD ANALYSIS MATRIX

Public Health

HAZARD	Severity Rating	History WF-2	Vulnerability WF-5	Maximum Threat WF-10	Probability WF-7	Total Score
Biological						
Pandemic Influenza	Rating	<u>2 X 7</u>	<u>5 X 8</u>	<u>10 X 8</u>	<u>7 X 8</u>	190
	Subscore	=14	=40	=80	=56	
Novel Agent, SARs, MRSA, MDR-TB	Rating	<u>2 X 7</u>	<u>5 X 8</u>	<u>10 X 8</u>	<u>7 X 8</u>	190
	Subscore	=14	=40	=80	=56	
Category A Agents	Rating	<u>2 X 7</u>	<u>5 X 7</u>	<u>10 X 7</u>	<u>7 X 7</u>	168
	Subscore	= 14	= 35	= 70	= 49	
Hazardous Material Releases						
Nuclear Accident	Rating	<u>2 X 1</u>	<u>5 X 1</u>	<u>10 X 1</u>	<u>7 X 1</u>	24
	Subscore	= 2	= 5	= 10	= 7	
Transportation Hazards, Hazardous Chemicals	Rating	<u>2 X 7</u>	<u>5 X 5</u>	<u>10 X 6</u>	<u>7 X 6</u>	141
	Subscore	= 14	= 25	= 60	= 42	
Chemical Weapons of Mass Destruction	Rating	<u>2 X 1</u>	<u>5 X 8</u>	<u>10 X 8</u>	<u>7 X 8</u>	178
	Subscore	= 2	= 40	= 80	= 56	
Pipeline Disruption	Rating	<u>2 X 3</u>	<u>5 X 5</u>	<u>10 X 5</u>	<u>7 X 5</u>	116
	Subscore	= 6	= 25	= 50	= 35	
Terrorism	Rating	<u>2 X 1</u>	<u>5 X 8</u>	<u>10 X 10</u>	<u>7 X 8</u>	174
	Subscore	= 2	= 16	=100	= 56	
Technological						
Electronic (computer)	Rating	<u>2 X 8</u>	<u>5 X 4</u>	<u>10 X 4</u>	<u>7 X 4</u>	104
	Subscore	=16	= 20	=40	= 28	

Terrorism

The Dallas, Oregon was the location of the first incident of bioterrorism in the United States. Salmonella was sprinkled into salad bars by members of the Rajneeshees, a religious cult, in an attempt to steal a county election in Oregon in 1984. In 2001 anthrax spores were sent through the US mail. Twenty three people became ill and five died. In 2007 members of the Earth Liberation Front and Animal Liberation Front were arrested and convicted of arson and terrorism acts for burning and destroying up to \$100 million in private and government property. One of these properties was the Superior Lumber Office in Glendale. Thus, it would not be surprising if other potential threat elements with radical views use force or violence, specifically the utilization of Weapons of Mass Destruction, in furtherance of a specific motivation or goal. Also, the proposal of Ujaama promoting creation of a "jihad training camp" in Bly, Oregon, is just one of many examples why terrorism is a significant concern for this state.

Pandemic Flu

Three pandemics have occurred in the last 90 years, in 1918, 1957 and 1968. Scientists predict that another pandemic will happen, although they cannot say exactly when. 1) The 2006 Douglas County Pandemic Influenza Plan using a model for a moderate pandemic projects that approximately 35% of the population will become ill and the outbreak will occur in one or more waves. Thus, we then calculated that of the 104,000 county residents, approximately 247 will require hospitalization and nearly 60 will die. When a pandemic occurs, the Douglas County Health & Social Services will be an important agency responding to the hazard. The State Public Health Division will be the lead state agency in Oregon and will operate under a National Incident Management System compliant Incident Command System, in collaboration with Oregon's 34 local health departments as well as American Indian tribal jurisdictions.

Severe acute respiratory syndrome (SARS)

Severe acute respiratory syndrome (SARS) was first reported in Asia in February 2003. Over the next few months, the illness spread to more than two dozen countries in North America, South America, Europe, and Asia before the SARS global outbreak of 2003 was contained. According to the World Health Organization (WHO), a total of 8,098 people worldwide became sick with SARS during the 2003 outbreak of these, 774 died. There have been no cases of SARS reported in the world since 2004.

Methicillin-resistant Staphylococcus Aureus MRSA and XDR TB

Extensively drug-resistant tuberculosis (XDR TB) is a relatively rare type of multidrug-resistant tuberculosis (MDR TB). It is resistant to almost all drugs used to treat TB, including the two best first-line drugs: isoniazid and rifampin. XDR TB is also resistant to the best second-line medications: fluoroquinolones and at least one of three injectable drugs (i.e., amikacin, kanamycin, or capreomycin).

Methicillin-resistant Staphylococcus aureus (MRSA) infection is caused by Staphylococcus aureus bacteria — often called "staph." Decades ago, a strain of staph emerged in hospitals that was resistant to the broad-spectrum antibiotics commonly used to treat it. Dubbed methicillin-resistant Staphylococcus aureus (MRSA), it was one of the first germs to outwit all but the most powerful drugs. MRSA infection can be fatal. In the 1990s, a type of MRSA began showing up in the wider community. Today, that form of staph, known as community-associated MRSA, or CA-MRSA, is responsible for many serious skin and soft tissue infections and for a serious form of pneumonia.

Category A Agents

The State of Oregon's Public Health Hazard Vulnerability Working Group identified several biological agents as potential high-impact agents against our population. They used the following criteria: 1) public health impact based on illness and death; 2) delivery potential to large populations based on stability of the agent, ability to mass produce and distribute a virulent agent, and potential for person-to-person transmission of the agent; 3) public perception as related to public fear and potential civil disruption; and 4) special public health preparedness needs based on stockpile requirements, enhanced surveillance, or diagnostic needs. Based on the overall criteria and weighting, agents were placed in categories for initial public health preparedness planning efforts.

Novel agents are disease producing agents that we have not been exposed to before, like SARs and highly pathogenic H5N1 bird flu.

For additional information please refer to the Oregon Public Health Hazard Vulnerability Assessment – Draft August 2007.

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*Source: Oregon Emergency Management, Oregon Emergency Reporting System
Haz/Mat response data provide by the Office of State Fire Marshal*

Coastal Area

1997 9 spills reported to OERS
1998 26 reports, 1 which required a Haz/Mat team response.
1999 27 reports, 1 which required a team response.
2000 7 reports, 6 which required a team response.
2001 18 reports, 2 which required a team response
2002 No OERS data available
2003 15 reports, non required a team response
2004 16 reports, non required a team response
2005 14 reports, non required a team response
2006 25 reports
2007 7 reports

Central County

1997 70 spills reported to OERS
1998 89 reports, 1 which required a Haz/Mat team response.
1999 46 reports, 1 which required a team response.
2000 50 reports, 1 which required a team response.
2001 53 reports, 1 which required a team response
2002 No OERS data available, 2 Haz/Mat responses
2003 48 reports
2004 51 reports
2005 57 reports
2006 38 reports, 6 which required a team response
2007 55 reports

Fire

Improved surcharge lots are parcels that have some sort of improvement on them. Both Coos Forest Protective Association (CFPA) and Douglas Forest Protective Association (DFPA) estimate that 98% or greater would be some sort of residence.

Coastal Area

Coos Forest Protective Association 1/2008 has 641 improved forest surcharge lots in their protection area of Douglas County

Western Lane has 68 improved forest surcharge lots in their protection area of Douglas County (estimate that the $\frac{3}{4}$ [51] of these are in the coastal area), so based on the $\frac{3}{4}$ estimation, add 51 to CFPA's 641, equals an estimated 692 surcharge lots in the coastal area.

Using the 98% estimate of homes equals 678 homes, times 2.48 people per household, it is estimated that 1,681 people live directly in the forest area, which is 26% of the coastal population.

Central Area

Douglas Forest Protective Association 2008

10,839 improved forest surcharge lots in their protection area of Douglas County plus the 25% (16) of the Western Lane lots equals 10,855. Using the 98% estimate of homes equals 10,637 homes, times 2.48 people per household, it is estimated that 26,382 people live directly in the forest area, which is 27% of the central county population.

Per DFPA 1/2008 History of Fires

Since DFPA was formed in 1912 their records indicate that they average 105 fires a year, with 4093 acres per year. A more recent 10-year average shows 88 fires per year burning a average of 707 acres. Ranges show a low of 29 fires in 1948 to a high of 245 fires in 1917. In comparison for acreage burned, shows a range of 32 acres in 1997 to 30,440 in 1978. In 2007 DFPA had 105 fires but, only 72 acres were burned.

Flood

Reference *Douglas County Flood/Landslide Mitigation Plan* for historical flood data.

Population Estimates

Douglas County Planning Dept. (Memos Dec. 3 and 6, 2002)

Coastal Area population – 6,413

Central County population – 98,262

Tsunami Inundation zone population - 305 = 5% of coastal population

Seismic Zone 4 (coastal population) - 6,413

Seismic Zone 3 (central population) - 98,262

Landslide hazard (coastal area) population - 360 = 5.7% of coastal population

Landslide hazard (central population) - 2,400 = 2.4% of central population

Floodplain hazard (coastal area) population - 700 = 11% of coastal population

Floodplain hazard (central area) population - 8,680 = 8.8% of central population

Estimate that 2.48 people per household in Douglas County

Per Avista Utilities (February 2008)

Roseburg service area has 12,962 customers

Commercial users = 2,129

Industrial users = 13

Tsunami

Tsunamis have been recorded on the Oregon Coast in 1854, 1868 x2, 1872, 1873, 1946, 1952, 1957, 1960, 1964, 1968, 1992, 1994, 1995x2, 1996, 1997, 2001 most registering in centimeters. In 1964 an Alaska earthquake caused a tsunami that was 3.7 meters along various sections of Oregon coast. On November 15, 2006, a magnitude 8.1 earthquake in the Kuril Islands did not create a tsunami, but did create tidal surges that caused \$700,000 in damages in Crescent City, CA. June 14, 2005, and December 20, 2007, both were events that were possibly going to generate a tsunami. Both of these events were misinterpreted by various local agencies and caused significant confusion to the general population.

Source: West Coast and Alaska Tsunami Warning Center

Severe Weather

Wind

January 1880, January 1921, April 1931, November 1951, December 1951, November 1958, October 1962, March 1963, December 1995, February 2002, December 2006 and December 2007 were all listed as "exceptionally destructive wind storms."

Snowfall

Years 1956, 1961, 1962 brought exceptional amounts of snowfall (over 6") to valley areas. Eight years from 1950 to present that brought 4" to 5" of snow and six years from 1949 to present 3" to 4" of snow. The National Weather Service estimates less than a 3% chance of receiving 6" of snow in the valley area in any given year

Source: Oregon Climate Service and National Weather Service

Earthquake

Magnitude (whether Richter (ML) or Moment MW) describes the size of the earthquake (energy release). One magnitude value is assigned to the earthquake. Moment magnitudes are used to describe larger earthquakes (usually magnitude 7 or larger) while Richter magnitude is generally either not used or used for earthquakes magnitude 6.5 or lower

Source: Oregon Department of Geology and Mineral Industries