

Hazard Vulnerability Analysis – *Union County*

Union County Geographic Description

Union County is located in northeastern Oregon and bordered by Baker and Grant County to the south, Wallowa County to the north, and Umatilla County to the west. Union county covers an area of 2,038 square miles and has a population of about 25,000. La Grande, which is located approximately in the center of the county, has about 50% of the population and is the county seat.

The county is mountainous, with the Blue Mountains situated on the western and northern portions of the county, the Wallowa Mountains along the east, and the Eagle Caps and the Elkhorn Mountains on the southern end of the county. The county contains approximately 53% forestland and 47% is valley floor, mostly used for crop production. Elevation at La Grande is 2,788 feet. Major thoroughfares through the county include Interstate 84, Highway 82, Highway 203, Highway 204, Highway 237 and Highway 244. The five state highways lead to Wallowa, Baker and Grant Counties. The UPRR also travels through Union County. The major river drainage is the Grand Ronde River basin, with Catherine Creek being a major tributary. Numerous other tributaries drain into the Grande Ronde River.

Hazard Analysis Methodology – *Provided by OEM*

The local emergency management organization and other interested parties should begin the emergency planning process by examining hazards that could affect the area.

Conducting a hazard analysis is a useful first step in planning for mitigation, response, and recovery. The method that follows provides the jurisdiction 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.

The following categories are used in conducting hazard analysis:

History (weight factor = 2)

History is the record of hazard occurrences of previous disasters or events.

Vulnerability (weight factor = 5)

Vulnerability is the percentage of population and property that is at risk to each hazard.

Maximum Threat (Weight factor = 10)

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

Probability (weight factor = 7)

Probability is the number of occurrences of each hazard in the past 100 years and the factors that have contributed to increased or decreased risk for the area involved.

By multiplying the "severity rating" of the rating system shown on the next page by the weighted factors associated with the categories above, we can arrive at a sub score for history, vulnerability, maximum threat, and probability for each hazard. Adding the sub scores will produce a total score for that hazard.

For example, flood scored high with ten (10) points for the severity rating, and history has a factor weighting of two. $2 \times 10 =$ sub score of 20. The vulnerability of the sample jurisdiction is low, however: a flood normally would not affect more than 1% of the lives and developed property in the jurisdiction. Low is scored with the one point for the severity rating, and vulnerability has a factor weight of five. $5 \times 1 =$ sub score of 5. After figuring maximum threat and probability, the total score for flooding is 145.

The total score isn't as important as how it compares with the total scores for other hazards the jurisdiction faces. By comparing scores, the jurisdiction can determine priorities, such as which hazards should the jurisdiction be most concerned about, or which ones less so?

The hazard analysis process should be completed on the 5 or 6 hazards *most* likely to occur within this planning jurisdiction. Upon completion, emergency planners should have a fairly good idea on which events to focus initial concentration.

The following categories are used in determining the severity or risk factor:

Severity Ratings

Low = 1 point
Medium = 5 points
High = 10 points

History

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

Vulnerability

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

Maximum Threat

Low < 5% affected
Medium 5 - 25% affected
High > 25% affected

Probability

Low > 1 chance per 100 years
Medium > 1 chance per 50 years
High > 1 chance per 10 years

Hazard Definitions

All areas of Union County are subject to the effects of both natural and human-caused disasters that may include the following:

Natural Disasters

1. Weather emergencies may include floods, windstorms, severe winter storms, severe thunderstorms, lightning-caused wildfires and major drought conditions.
2. Geologic disasters may include earthquakes, volcanic ash fallout, and landslides.
3. Epidemiological emergencies may include the infection of humans from contaminated food, water supplies or animals. Infection of county agricultural products, including livestock, is also a possibility.

Human-Caused Disasters

1. Fire and explosion disasters may include industrial, private structures, city facilities, or transportation related accidents.
2. Transportation emergencies may include incidents involving tractor-trailer rigs, airplanes, vehicles carrying passengers, freight trains, and other related vehicles.
3. Hazardous materials (HazMat) emergencies may include gases, explosives, corrosives, flammable liquids and solids, oxidizers, poisons, or radioactive materials involved in incidents at fixed sites or during transportation.

Hazard Analysis

The hazard vulnerability analysis work sheet was distributed to local emergency responders including law enforcement, fire, public works, 911 dispatch and SAR. Also included were commissioners, hospital and public health. Representatives were geographically divers including respondents from La Grande, Elgin, Cove, Island City, Union and rural Union County. Based on the hazard analysis criteria provided by Oregon Emergency Management (OEM), the following hazards are considered to be of greatest risk to Union County:

Severe Winter Weather 166 points

Winter storms generally involve large accumulations of snow, ice, wind, and very low temperatures. These storms usually occur between the months of December and February. In the past, Union County has experienced storms that are so intense the impact has closed Interstate 84, state highways, and local roads. In 1989 & 1992, the roadways were closed for several days resulting in fuel shortages, power outages, and isolated families. There is no reason to believe this situation will change.

Seismic / Earthquake 145 points

Earthquakes have for centuries been the source of destructive events in cities throughout the world. Unlike many other earth processes, the effects of major earthquakes exceed all political and social boundaries and can have an impact on cities miles from the epicenter.

Union County has numerous faults running northwest to southeast throughout the mountain ranges and along the valley floor. DOGAMI identifies the potential of a magnitude 7 earthquake in the Grande Ronde Valley. Given the topography of Union

County, even a small-to-moderately sized event could cause significant property damage, injury, potential death and isolate the population from the outside world.

A Cascadia Subduction Zone event has approximately a 30% chance of taking place in the next 50 years. Depending on the severity of the associated quake, Union County will likely see significant effects including extended interruptions of utilities, interruptions of the supply chain and significant effects on the regional transportation system. Of paramount concern is the number of individuals fleeing severely affected areas seeking shelter.

Wildland-Urban Interface Fires 142 points

The heavily forested Elkhorn Mountains, Blue Mountains, Eagle Cap Mountains, and the Wallowa Mountains surrounding Union County are susceptible to fire hazards. The valley floor is covered with grass and agricultural fields. This topography, together with long, dry, hot summers and frequent lightening storms, can produce large forest/range fires. Density of homes in forested areas contributes to wildland-urban interface events. A major fire event could result in extensive damage to life and property.

It should be noted here that although WUI fires received a Hazard Analysis score of 165 points, this score does not reflect genuine risk, it only identifies history and probability based on that history. The recently completed Union County Community Wildfire Protection Plan (CWPP) identified 16 wildland-urban interface areas of highest risk using a true risk assessment based on factors like topography, weather, fuels and human-influenced factors like access, water supply, density of development, etc. Summer 2015 experienced significant WUI fires in the region further emphasizing the threat to Union County. Emergency Services is nearing completion of the Union County Community Wildfire Protection Plan.

Hazmat-Transportation 139 points

This hazard would result from a release of hazardous materials, which would have a detrimental impact on the environment, life-safety and property. A hazmat incident may be associated with long-term contamination or toxicity to the impact area. Interstate 84 and the Union Pacific Railroad run from the Umatilla county border to Baker county, along with numerous major arterial state highways. Numerous shipments of hazardous materials are performed daily. With the increased traffic of hazardous materials through the county, there is no reason to believe that the risk will decrease. Approximately 75% of the population follows these routes; the potential risk of this hazard is determined to be high.

Drought 129 points

Union county has suffered periods of drought in the past. The main impact has been on agriculture, fish, wildlife, and an increased fire risk. In a worst case scenario, a drastic drought would require strict conservation measures to ensure an adequate supply of potable water. Drought is not considered a widespread public safety issue. They will continue to happen but will not likely affect large amounts of people.

Epidemic / Health Emergency 128 points

Numerous illnesses are monitored and reported by Center for Human Development (Union County Public Health) but few are likely to require assistance from outside the public

health agency. Should outside assistance become necessary, CHD and Union County Emergency Services is working to improve response roles in an epidemiological emergency. This type of emergency has the potential to affect large segments of the population of Union County and strain response resources.

Windstorm / Tornado 116 points

Wind is usually associated with thunder or severe winter storms, but wind events by themselves have a history in Union County of property damage. Building codes minimize building damage but utilities experience damage and aesthetic elements like trees can be negatively affected. Tornadoes are not common but have occurred and have the potential of future occurrence.

Flooding 112 points

Floods represent the most common and best known of the natural hazards. They also encompass the broadest range of characteristics among the natural hazards. Union county has two types of flooding hazards:

1. **Flash Floods** – affect small drainages and give little or no warning. These types of flooding dangers pose a great concern to area cities, farms and residents located in draws and canyons. Union County has a number of creeks that have experienced flooding and threaten life and property. Union county monitors the National Weather Service out of Pendleton to obtain forewarning of these events.
2. **Snow Melt Flooding** – occurs after warm rains fall on heavy snow pack or by rapid melting of annual snow pack in mountainous regions. This type of flooding is the most significant type to affect the county’s populated areas.

Terrorism 101 points

The events of September 11, 2001 raised awareness of terrorism to a level not experienced since the height of the Cold War. Due to the relative isolation of Union County, its low population density and a minimal amount of targets, terrorism from a group outside the United States is not likely or expected. Based on past history, terrorism resulting from anti-government groups, or animal and earth liberation groups is much more likely, and even then the probability of occurrence is quite low.

Dam Failure 91 points

There are several dams in the region that, if breached, could result in injury, death and property damage to a small percentage of Union County residents. These dams are located in remotely populated areas of Umatilla, Baker and Union Counties. One exception is the Morgan Lake dam, which is located on the western side of the Grande Ronde Valley above the City of La Grande. If breached, the onslaught of water would flow directly into the City and cause injury, potential death and significant property damage. The City of La Grande, as the dam’s owner, is responsible for writing and maintaining an Emergency Action Plan for the dam. Union County Emergency Services and Sheriff’s Office would coordinate emergency response with the City in the event of a dam failure.

Landslide 88 points

There is historical evidence of landslide occurrence around the Grande Ronde Valley. Historical landslides are visible along Owsley Canyon Road and along the western and

southern edges of the City of La Grande. The Grande Ronde Hospital is constructed on an ancient landslide. There have been no documented landslides during the time of European settlement in the Grande Ronde Valley, but small, isolated events due to extremely heavy precipitation have occurred in mountainous regions. There has been no documented injury, death or property damage associated with these events.

Dust Storm

75 points

These occur during the period of time when agricultural activities, like plowing fields, mixes with windy weather and creates visibility issues along transportation routes. Though very infrequent, they do occur and there is no reason to assume dust storms would not continue to occur in the future. Public safety agencies coordinate traffic control and warning to minimize injury and property damage.