

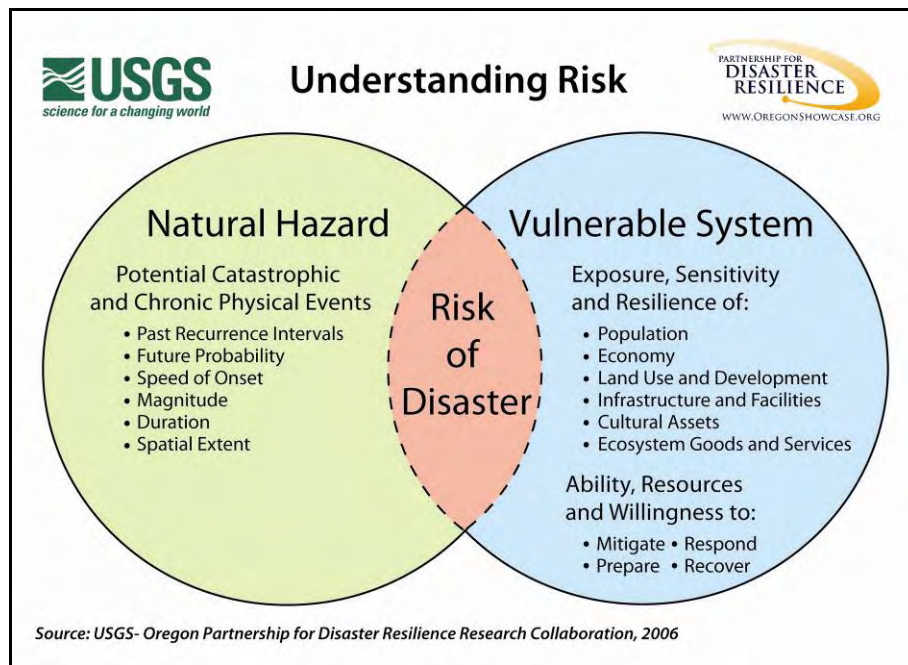
Volume II: Hazard Annex

Introduction

The foundation of the Marion County multi-jurisdictional Natural Hazards Mitigation Plan is the risk assessment. 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.

The hazard annexes in Volume II identifies and profiles the location, extent, previous occurrences, and future probability of natural hazards that can impact the participating jurisdictions, as highlighted in Figure II.1 below. The information in this section was paired with the information in Section 2 – Community Overview during the planning process to identify issues and develop actions aimed at reducing overall risk, or the area of overlap in the figure below.

Figure II.1. Understanding Risk

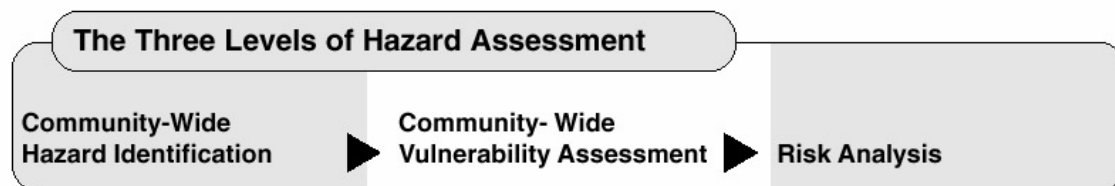


This section drills down to local level information and results in an understanding of the risks the communities face. In addition to local data, the information here relies upon the Region 3 (Mid-Willamette Valley) Regional Risk Assessment in the State of Oregon’s Natural Hazard Mitigation Plan.

What is a Risk Assessment?

A risk assessment consists of three phases: hazard identification, vulnerability assessment, and risk analysis, as illustrated in the following graphic.

Figure 3.1 The Three Phases of a Risk Assessment



Source: *Planning for Natural Hazards: Oregon Technical Resource Guide, 1998*

The first phase, hazard identification, involves the identification of the geographic extent of a hazard, its intensity, and its probability of occurrence. This level of assessment typically involves producing a map. The outputs from this phase can also be used for land use planning, management, and regulation; public awareness; defining areas for further study; and identifying properties or structures appropriate for acquisition or relocation.⁵⁷

The second phase, vulnerability assessment, combines the information from the hazard identification with an inventory of the existing (or planned) property and population exposed to a hazard, and attempts to predict how different types of property and population groups will be affected by the hazard. This step can also assist in justifying changes to building codes or development regulations, property acquisition programs, policies concerning critical and public facilities, taxation strategies for mitigating risk, and informational programs for members of the public who are at risk.⁵⁸

The third phase, risk analysis, involves estimating the damage, injuries, and costs likely to be incurred in a geographic area over a period of time. Risk has two measurable components: (1) the magnitude of the harm that may result, defined through the vulnerability assessment, and (2) the likelihood or probability of the harm occurring. An example of a product that can assist communities in completing the risk analysis phase is HAZUS, a risk assessment software program for analyzing potential losses from floods, hurricane winds and earthquakes. In HAZUS-MH current scientific and engineering knowledge is coupled with the latest geographic information systems (GIS) technology to produce estimates of hazard-related damage before, or after a disaster occurs.

⁵⁷ Burby, R. 1998. *Cooperating with Nature*. Washington, DC: Joseph Henry Press, 126.

⁵⁸ Burby, R. 1998. *Cooperating with Nature*. Washington, DC: Joseph Henry Press, 133.

This three-phase approach to developing a risk assessment should be conducted sequentially because each phase builds upon data from prior phases. However, gathering data for a risk assessment need not occur sequentially.

Probability and Vulnerability Assessments

The hazard annexes in Volume II describe each hazard's probability of future occurrence within Marion County, as well as the county's overall vulnerability to each hazard. To facilitate connections with the State of Oregon's Natural Hazards Mitigation Plan, Marion County used the same rating scales as provided within Oregon Emergency Management's Hazard Analysis Methodology template, and are listed below. Probability estimates are based on the frequency of previous events, and vulnerability estimates are based on potential impacts of the hazard to Marion County.

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

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

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

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

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

High = More than 10% affected

Moderate = 1-10% affected

Low = Less than 1% affected

The probability and vulnerability scores in each hazard annex are taken from the November 2006 Marion County Hazard Analysis. Scores were reviewed by the Marion County steering committee members during the plan update process and modified if the steering committee believed they did not accurately reflect Marion County's current probability and vulnerability.

Table HA.1 below summarizes the hazard probability and vulnerability scores for Marion County.

Table HA.1 - Marion County Risk Analysis Summary

Hazard	Probability	Vulnerability
Dam Failure	Low	High
Drought	High	High
Earthquake	High	High
Flood	High	High
Landslide	High	Moderate
Volcano	Low	Moderate
Wildfire	Moderate	Moderate
Windstorm	High	High
Winter Storm	High	High