

# UNIVERSITY OF WASHINGTON

## Hazard Identification and Vulnerability Assessment (HIVA)

### Executive Summary

October 2003

#### *Emergency Management at the UW*

**A significant natural or human-caused hazard would have an impact on the University of Washington's people, programs and facilities.** In recent years, new scientific information and news of other disasters throughout the U.S. and the world have provided heightened awareness of the threats and possible consequences of disasters and an ever-more-vivid picture of our vulnerabilities. The terrorist attacks of September 11, 2001, and subsequent events have precipitated a review of campus security, especially in the research areas that use chemical, biological, and radioactive materials. The University has the capability to effectively organize its resources, but more needs to be done.

The University is committed to the welfare of its community—students, faculty, staff, visitors—and to preserving the institution. To fulfill its mission and commitments in the event of a disaster, the University should strive to become disaster resistant. Disaster resistance is achieved through recognition and analysis of the risks of natural and human-made hazards, comprehensive planning for mitigation of the human and economic impacts of disasters and resumption of University functions.

The first step in applying the tools of emergency management to the unique environment of a major research university is the completion of a Hazard Identification and Vulnerability Assessment (HIVA). This document is not an in-depth scientific analysis or plan. Rather, it is a summary of the relevant information needed to allow a subjective evaluation of the risks posed by certain natural and human-caused hazards.

The UW-HIVA, completed as part of the Disaster Resistant UW Project conducted in 2001 and 2002, provides a narrative description of hazards at the UW Seattle main campus, not including the Bothell campus, the Tacoma campus, or space leased by the University throughout the Northwest U.S.

In the following pages, consideration of each hazard follows an outline that provides:

**Definition.** Defining each hazard leads to an understanding of the nature of the hazard, the direct and indirect effects, and the secondary impacts that maybe created. Not every conceivable hazard is addressed within this document, as some pose little threat to the

#### **Hazards affecting UW**

##### **Natural**

- Earthquake
- Flooding
- Landslide
- Severe Local Storm
- Snow Storm
- Tsunami/Seiche
- Volcanic Eruption
- Water Shortage
- Wind Storm

##### **Human-Caused**

- Civil Disturbance
- Hazardous Material Incident
- Terrorism
- Transportation Accident
- Urban Fire

University, e.g., avalanche or wildfire. Also the UW-HIVA does not deal with epidemics or pandemics, which are considered to be under the purview of state and local public health organizations.

The list of potential hazards is long; however these three pose the greatest threat:

- **Earthquake.** Earthquake is the most destructive hazard the University faces. Three major earthquakes have affected the UW in the past 52 years (1949, 1965, and 2001). New information about the nature and extent of the seismic threats in Seattle and the Puget Sound region increases the urgency for UW planning. The majority of potential damage and casualties would come from building damage and the effects of unsecured equipment and other non-structural elements throughout campus buildings. The secondary hazards of fire and hazardous materials releases could be expected to easily overwhelm the University's resources. If the University prepares/mitigates for earthquake, the impacts of the other hazards would be managed as well.
- **Terrorism.** The inherent open environment of an academic research institution makes the UW vulnerable to terrorist attack. A large population moving freely around the campus makes it difficult to track activities of individuals who might choose to harm the University's people, programs, or properties. Large, highly visible concentrations of University people could be at risk from external as well as internal threats. Terrorism includes Chemical, Biological, Radiological, Nuclear, Explosive and Cyber-terrorism threats and incidents.
- **Urban Fire.** Within minutes a fire can wipe out decades of research and millions of dollars worth of equipment. While the direct effects of even a large urban fire are generally limited to the immediate area of the fire, emergency services to the University could be adversely affected if large urban fires occur in other areas of the city, thereby reducing and slowing Seattle Fire Department's response to the UW campus.

**History.** An important facet of this hazard analysis is the historical data relating the University's experience with the impacts of hazards in the past. This history provides crucial documentation of the reality of such hazards and helps to calibrate planning and preparedness efforts. Unfortunately, most historical documentation of past events at the University is not well catalogued.

**Vulnerabilities.** The main goal of the HIVA is to assess the vulnerability of the University's people, property, and environment to hazards. This assists in providing necessary information to estimate the socio-economic impacts of disasters and to develop strategies for mitigation and emergency preparedness. These major vulnerabilities have become clear through the HIVA process:

- The University can be isolated from non-campus resources during a significant event. Such an event would most likely be a regional earthquake, but also it could include severe weather or a terrorist attack.

- The University's operations command capability would be limited during an event that compromises the existing UW Emergency Operations Center at the Bryant Building. Such an event could be an earthquake, seiche, localized fire, or terrorist attack.
- Significant research could be lost in the event of terrorist attack, earthquake, or fire. Not only would such losses affect the specific research programs, but also the stature of the University and other research institutes relying on the University's resources could be adversely affected.
- Students and other members of the campus community are particularly vulnerable to injury from events, either directly or as a result of heroic actions. Injuries could result from falling objects during an earthquake, or from performing heroic actions while attempting to save lives.

**Effects.** Creating a worst-case scenario provides information about the potential location of damage, the amount of land area that could be affected, and the severity of certain types of hazards.

### ***Recommended Actions***

Recommendations for mitigation steps for each of the hazards are contained in the full HIVA (a separate document). These form the basis for a formal UW's Hazard Mitigation Plan, the next step toward developing a disaster resistant university.

The following general recommendations are not hazard-specific, but attention to them would improve the University's planning.

- Improve record keeping on the damage, costs and effects of emergencies to aid future planning and mitigation efforts.
- Shift UW maps/records to the same geographical coordinates as the GIS (Geographical Information System) used by the city, state, and federal government.
- Assess hazards and vulnerabilities when making space allocation decisions for University activities.

### ***Future Direction***

The UW is vulnerable to significant natural and human-caused hazards. The HIVA demonstrates what is at risk and provides ample reason for continuing the emergency planning process. **Moreover, it is clear that the University has the capability to effectively organize its resources and to develop mitigation strategies to minimize the impact of future disasters.**

***For More Information*** – Please contact the UW Office of Emergency Management at (206) 897-8000.