

# Appendix D

## Natural Hazard Survey Summary

### Purpose

ONHW and the Department of Land Conservation and Development (DLCD) worked together to develop a hazard survey that focused on community's efforts to develop risk assessments and community needs related to FEMA Flood Insurance Rate Map (FIRM). Questions in the survey specifically asked about community efforts to identify hazards and to conduct vulnerability assessments. Hazard identification, involves the identification of the geographic extent of a hazard, its intensity and its probability of occurrence. A 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. The survey built upon current survey data sets and targeted planners and GIS professionals in Oregon cities and counties. The following is a brief summary of the results of this survey.

### Methodology

The survey was sent to 222 City and County planners and GIS professionals around the state in March and April 2005. The survey was conducted on-line. Respondents were notified via email with a direct link to the survey. A total of 38 city and county representatives responded to the survey (17% response rate). Due to the limited number of responses, this survey is used for scoping purposes only.

The survey questions fell into the following categories:

- Natural hazards affecting the community
- Mapping and vulnerability assessment actions
- Flood Insurance Rate Maps & Flood Map Modernization Program
- FEMA HAZUS software

ONHW conducted a secondary analysis of the survey data provided by PlanGraphic, Inc. As a result, 'n' numbers for certain responses were unavailable.

### Findings

#### Natural Hazards Affecting the Community

Respondents were asked what natural hazards affect their jurisdiction. The natural hazards that affect jurisdictions most frequently are: flood

(50%), wildfire (24%), landslide or debris flow (13%), and tsunami (11%). In an effort to truth the responses to this question, ONHW compared individual community responses with the County Hazard Analyses found in the State Natural Hazard Plan. This analysis indicated that in this survey, 13 out of 38 respondents failed to identify one or more high risk hazards identified in the State Natural Hazard Plan Regional Risk Profiles.

**Table C-1: Natural hazards that affect respondents' jurisdiction (n=38)**

	Yes		No		No Answer	
	Number	Percent	Number	Percent	Number	Percent
Flood	19	50%	14	37%	5	13%
Wildfire	9	24%	15	39%	14	37%
Landslide or Debris Flow	5	13%	18	47%	15	39%
Tsunami	4	11%	6	16%	28	74%
Coastal Erosion	3	8%	7	18%	28	74%
Drought	3	8%	17	45%	18	47%
Earthquake	3	8%	21	55%	14	37%
Winter Storm	3	8%	22	58%	13	34%
Volcano	0	0%	16	42%	22	58%

Source: PlanGraphics, Natural Hazards Survey, 2005

## Mapping and Vulnerability Assessment Actions

The survey asked respondents to indicate whether or not they had mapped the geographic extent of hazards known to affect communities in Oregon. The natural hazards that jurisdictions have mapped most frequently are: flood (74%), landslide or debris flow (26%), earthquake (24%), wildfire (16%), and tsunami (13%). The response to this question was consistent with current state priorities for mapping natural hazards.

**Table C-2: Natural hazards that jurisdictions have mapped (n=38)**

	Yes		No		No Answer	
	Number	Percent	Number	Percent	Number	Percent
Flood	28	74%	7	18%	3	8%
Landslide or Debris Flow	10	26%	13	34%	15	39%
Earthquake	9	24%	14	37%	15	39%
Wildfire	6	16%	16	42%	16	42%
Tsunami	5	13%	6	16%	27	71%
Coastal Erosion	4	11%	6	16%	28	74%
Volcano	3	8%	13	34%	22	58%
Winter Storm	1	3%	21	55%	16	42%
Drought	0	0%	18	47%	20	53%

Source: PlanGraphics, Natural Hazards Survey, 2005

Respondents were then asked to identify the hazards for which they had sufficient data to complete a vulnerability assessment. They are: flood (50%), wildfire (24%), landslide or debris flow (13%), and tsunami (11%).

**Table C-3: Hazards having sufficient vulnerability assessment data**

	Yes		No		No Answer	
	Number	Percent	Number	Percent	Number	Percent
Flood	19	50%	14	37%	5	13%
Wildfire	9	24%	15	39%	14	37%
Landslide or Debris Flow	5	13%	18	47%	15	39%
Tsunami	4	11%	6	16%	28	74%
Coastal Erosion	3	8%	7	18%	28	74%
Drought	3	8%	17	45%	18	47%
Earthquake	3	8%	21	55%	12	32%
Winter Storm	3	8%	22	58%	13	34%
Volcano	0	0%	16	42%	22	58%

Source: PlanGraphics, Natural Hazards Survey, 2005

### **Flood Insurance Rate Maps & Flood Map Modernization Program**

The survey asked respondents to identify common issues, inaccuracies or data quality problems, and inadequately reflected floodplain impacts experienced with the community's FIRMs. The most common issues that respondents reported were: changes in land use since FIRM was created (45%), inaccurate flood data (39%), current flood data not reflected in map (39%), inaccurate floodplain boundaries (37%) and inaccurate jurisdiction boundary (37%). The least common data problems with FIRMS that respondents report are: coastal flooding/erosion hazards not reflected in FIRM (11%), inaccuracies in other reference features (18%), inaccuracies in waterways (21%), flood control projects not reflected in FIRM (24%), and stream stabilization projects not reflected in FIRM (24%). Table C-4 displays the issues communities commonly experience with their FIRMs.

**Table C-4: Community FIRM Issues**

<b>Problems on FIRMS</b>	<b>Number</b>	<b>Percent</b>
Inaccurate flood data	15	39%
Current flood data not reflected in map	15	39%
Floodway location	13	34%
BFE Unknown	12	32%
BFE Inaccurate	10	26%
<b>Inaccuracies or data quality problems</b>	<b>Number</b>	<b>Percent</b>
Floodplain boundaries	14	37%
Jurisdiction Boundary	14	37%
Street network	12	32%
Waterways	8	21%
Other Reference Features	7	18%
<b>Impacts not adequately reflected in FIRMS</b>	<b>Number</b>	<b>Percent</b>
Changes in land use	17	45%
New/Altered Bridges or culverts	13	34%
Increase Public ownership/open space	12	32%
Flood control projects	9	24%
Stream Stabilization Project	9	24%
Coastal flooding/erosion hazards	4	11%

Source: PlanGraphics, Natural Hazards Survey, 2005

Respondents were asked whether or not their jurisdiction would be interested in partnering with FEMA to complete a map modernization project. Eighty-seven percent of respondents are interested in participating in a map modernization project with FEMA. Of those who indicated they would be interested, more than half of respondents report that the most common obstacle to participation would be staffing (58%) and lack of funds (58%). Table C-5 shows the map modernization participation obstacles as perceived by survey respondents.

**Table C-5: Obstacles to Participating in Map Modernization Project with FEMA (n=38)**

<b>Obstacle</b>	<b>Number</b>	<b>Percent</b>
Staffing	22	58%
Lack of funds	22	58%
Limits in local GIS capabilities	12	32%
Lack of GIS data	11	29%

Source: PlanGraphics, Natural Hazards Survey, 2005

## **FEMA HAZUS Software**

HAZUS-MH, is a nationally applicable standardized methodology and software program that contains models for estimating potential losses from earthquakes, floods, and hurricane winds. Estimating losses is essential to decision-making at all levels of government, providing a basis for developing mitigation plans and policies, emergency preparedness, and response and recovery planning.<sup>i</sup> Respondents were asked whether or not they: had HAZUS software, have staff that has been trained on HAZUS, or made use of HAZUS. Sixteen percent of

organizations report having HAZUS. Twenty percent of organizations report making use of HAZUS. More organizations report that staff has been trained on using HAZUS or that the organization has made use of HAZUS than report having HAZUS. Table C-6 illustrates the respondent's current use of HAZUS.

**Table C-6: Use of HAZUS**

	<b>Number</b>	<b>Percent</b>
Organization has HAZUS	6	16%
Staff been trained in HAZUS	12	32%
Organization made use of HAZUS	8	21%

Source: PlanGraphics, Natural Hazards Survey, 2005

## Conclusions

The survey yielded information on the ability of local governments to develop risk assessments and local issues regarding FEMA FIRMS. The following are key conclusions:

- Most communities had made efforts to complete at least the hazard identification portion of the risk assessment.
- Different agencies within jurisdictions do not have a consistent assessment of the risks hazards pose within the community.
- The flood hazard has been addressed by most communities due to the existence of federal data standards and mapping methodologies.
- FEMA FIRMS in Oregon are out of date.
- Staff and funding are obstacles for community involvement in the Flood Map Modernization Program.

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<sup>i</sup> Federal Emergency Management Agency. 2005. Overview of HAZUS-MH (Multi-Hazard) [http://www.fema.gov/hazus/hz\\_overview.shtm](http://www.fema.gov/hazus/hz_overview.shtm)