

HAZUS HOT ZONE

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Sugar House Community Earthquake Loss Estimation Study

The Sugar House Community is an historic district in Salt Lake City, Utah, a seismically active region on the Wasatch Front. The community dates back to the late 1800s when pioneers built an experimental sugar beet mill. Today, Sugar House is a mixed development that encompasses roughly six square miles. The residential building stock in the community is comprised mainly of unreinforced masonry (URM) buildings, which are vulnerable to the effects of earthquakes.

In the past decade, the State of Utah has taken a proactive approach to seismic safety, including measures to reduce the vulnerability of URMs. In February, 2008, the Utah General Assembly passed Joint Resolution 7, which urges the Utah Seismic Safety Commission to compile an inventory of URMs and to “recommend priorities to address the problem in a manner that will most effectively protect the lives, property and economy of the state.” HAZUS-MH analysis of potential losses to schools and other essential facilities played an important role in the passage of this resolution.

The Sugar House Community Earthquake Loss Estimation builds is the latest example of the use of HAZUS-MH in Utah to draw attention to the vulnerability of URMs to earthquakes.

The purpose of the project is to estimate losses in Sugar House to a magnitude 7.0 earthquake with a return period of 1,500 years. As stated by Stuart Moffatt, University of Utah and project lead, “We live on top of a fault in an area where a large percentage of the building stock is post-war brick-on-brick. We wanted to prepare a detailed map to help people see the potential loss we could suffer in our neighborhood.” (See map illustration on page 3.)

This was accomplished by using the HAZUS-MH Advanced Engineering Building Module (AEBM) to perform a Level 3 analysis of Sugar House parcels. The parcel geometries were combined with the Salt Lake County Assessor data to provide the AEBM with the input needed to perform the analysis. Using the structural engineering expertise of Dr. Larry Reavely of the University of Utah, an algorithm was developed to convert the exterior wall type attribute in the county assessor database to FEMA building types required for the AEBM analysis.

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FEMA

HUG News

As of December 2008, there are now 29 active HAZUS User Groups (HUGs) in existence, consisting of 28 HUGs in the United States and one international HUG. For more information on each of the HUGs, please visit their individual Web sites at http://www.fema.gov/plan/prevent/hazus/hz_reghugs.shtm. The goal for 2009 is to expand toward having a HUG in each state. The Central HUG (covering the six states in FEMA Region V) and the Heartland HUG (covering the four states in FEMA Region VII) are each expanding to support this goal. The FEMA Region IV HAZUS Technical Team has traveled their region in support of HAZUS and the forming of HUGs in each of Region IV's eight states.

Recently, Melissa Berry from the South Carolina Emergency Management Division (SCEMD) formed the South Carolina HUG (SCHUG). South Carolina is the first state to have the Web-based Comprehensive Data Management System (CDMS). As part of this project, SCEMD is updating the entire HAZUS-MH database to foster Level 2 analysis at both the state and local levels. Ms. Berry's vision for the SCHUG and the CDMS Web-Portal make her a true champion and supporter of HAZUS-MH. Accordingly, FEMA has awarded Ms. Berry the 2008 4th Quarter HAZUS User of the Year award.

In early 2009, new outreach pieces will be available for use by the HUGs: a HUG logo, PowerPoint template, business card, flyer and poster. Each of these will be customized with graphics related to each HUG.

Updates from the National HUG Leadership Conference Calls

Brian Shumon from FEMA Region II reported that Suffolk County, New York, may form a HUG and that the U.S. Virgin Islands may conduct a project to collect default HAZUS data for their area. In addition, Josh Friedman from the New York City Office of Emergency Management stated that the New York Metropolitan HUG is gaining momentum and may expand its focus beyond HAZUS. FEMA Region III and the Pennsylvania HAZUS Network are planning to kick off a Maryland HUG at the Towson University 22nd Annual Geographic Information Sciences Conference in March 2009. A California University at Pennsylvania student intern is working with a local county jurisdiction to incorporate HAZUS into their emergency management system. This work may spread to other counties in the state. Ken Leap reported that the California Office of Emergency Services (in FEMA Region IX) has filled its GIS manager position and that they are currently working on a grant to run HAZUS-MH for 14 counties in California. Nick Delmedico from FEMA Region X is planning to kick off a Northwest Regional HUG in early 2009.

Training Information

Advanced HAZUS-MH for Flood

Course Number: E172
JANUARY 12-15, 2009

This course provides in-depth instruction and hands-on exercises that develop the skills needed to effectively use HAZUS-MH for modeling the impacts on communities from riverine and coastal flooding.

Advanced HAZUS-MH for Hurricane

Course Number: E170
FEBRUARY 2-5, 2009

This course provides in-depth instruction and hands-on exercises that develop the skills needed to effectively use HAZUS-MH for modeling the impacts on communities from hurricanes.

Introduction to ArcGIS for HAZUS-MH Users

Course Number: E190
FEBRUARY 23-26, 2009

This hands-on course is designed to empower emergency managers, planners, engineers, public safety professionals and others with the skills needed to visualize, query and analyze information related to disaster mitigation, response, recovery and risk management using ArcGIS.

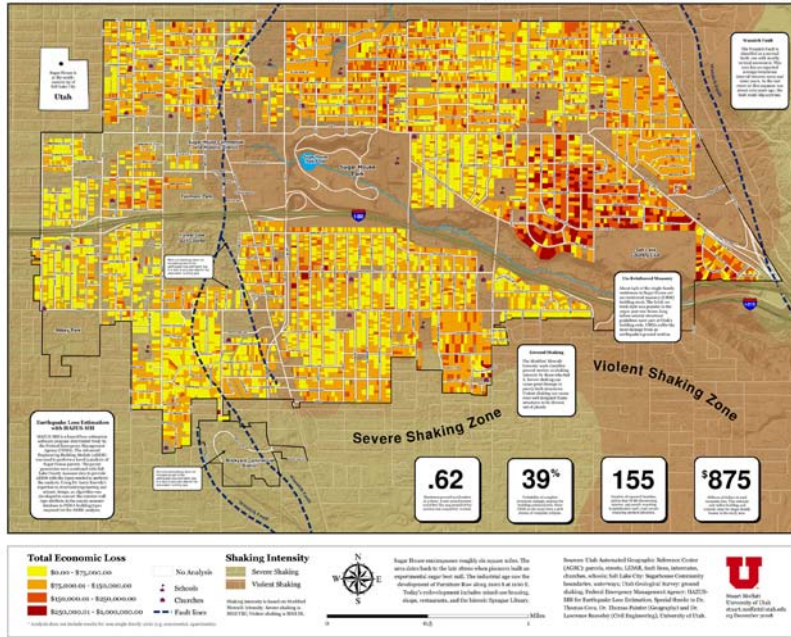
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Sugar House Earthquake Loss Estimation

For Single Family Residences in the Sugar House Community of Salt Lake City, Utah

Scenario: Probabilistic 1900 yr - M7.0 Event



A number of technical hurdles were encountered in data gathering, manipulation, database preparation, and mapping the AEBM results. These are highlighted at <http://sugarhouse-earthquake-loss-estimation.googlecode.com>.

The product of this study is a poster-sized map that shows total economic loss of residential dwellings from a magnitude 7.0 earthquake in the Sugar House community, by parcel.

The map shows:

- Shaking intensity, based on the Modified Mercalli Intensity Scale
- Maximum ground acceleration (.62)
- Probability of complete structural damage to URMs (39%)
- Estimate of total economic loss to single-family residential for buildings and contents only (\$875 million)

The Sugar House Community Loss Estimation Study and map is a powerful outreach tool for earthquake vulnerability reduction efforts in Salt Lake City and the

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Online HAZUS Courses

In addition to regular classroom settings, HAZUS-MH courses are also offered online.

HAZUS Podcasts
Introducing the HAZUS-MH Web Courses at www.esri.com/podcasts

ESRI Course Catalog
HAZUS-MH courses available at <http://training.esri.com/gateway> include:

- HAZUS-MH Overview and Installation
- HAZUS-MH for Decision Makers
- Introduction to Using HAZUS-MH to Assess Losses from a Riverine Flood Hazard
- HAZUS-MH Flood Model Output and Applications
- Integrating User Supplied Hazard Data into the HAZUS-MH Flood Model
- Introduction to Using HAZUS-MH for Hurricane Loss Estimation
- Introduction to Using HAZUS-MH for Earthquake Loss Estimation

Wasatch Front. The ability to clearly communicate risk at the parcel level with enhanced graphics represents an important contribution in the use of HAZUS-MH for loss estimation and risk communication.

For more information on the study, including the methodology that was used, please contact Stuart Moffatt at Stuart.Moffatt@utah.edu.

First Recipients of the HAZUS Trained Professional Designation Announced

Sue Evers, FEMA Region VII, **John Ingargiola**, FEMA Headquarters, and **Brian Shumon**, FEMA Region II, are the first HAZUS users to receive the HAZUS Trained Professional designation awarded by FEMA. These individuals have proven their dedication to developing proficiency in HAZUS-MH.



As recipients, each awardee will be recognized with a certificate, lapel pin and a listing on FEMA's Web site identifying them as a HAZUS Trained Professional.

HAZUS Trained Professionals must complete a number of prerequisite courses plus one hazard-focused course to qualify as a recipient. The requirements for the HAZUS Trained Professional are:

- E190: Introduction to ArcGIS (or equivalent experience)
- E313: Basic HAZUS-MH
- E317: Comprehensive Data Management

Plus one of the following three courses:

- E170: HAZUS-MH for Hurricanes
- E172: HAZUS-MH for Floods
- E174: HAZUS-MH for Earthquakes

For more information, contact Ray Chavelier, Emergency Management Institute, at ray.chevalier@dhs.gov.

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2008 HAZUS Users of the Year

Join us in congratulating the 2008 HAZUS Users of the Year!:

- **Thomas Mueller**, California University of Pennsylvania
- **Stacy Robinson**, PBS&J
- **Cynthia Quigley**, Riverside County, California
- **Melissa Berry**, South Carolina Emergency Management Division

Four New HAZUS-MH Outreach Flyers Released

The following HAZUS-MH flyers are now available at

www.fema.gov/plan/prevent/hazus/hz_library2.shtml

- HAZUS-MH: Information You Need for a Map-Based Disaster Exercise
- HAZUS-MH: FEMA's Gold Standard for Mitigation and Recovery Planning
- HAZUS-MH: Preparedness and Response Planning
- HAZUS-MH: "Out of the Box" Emergency Management Applications