

## UTAH EARTHQUAKE RESEARCH PRIORITIES FOR 2010

Below are the priorities defined by the 2009 Utah Earthquake Working Groups and the Utah Geological Survey for earthquake research in Utah in 2010, provided for consideration in responding to the U.S. Geological Survey National Earthquake Hazards Reduction Program (NEHRP) Request for Proposals.

### Faults

- Studies of faults should focus on those structures that have been identified as a priority by the 2009 Utah Quaternary Fault Parameters Working Group listed below:

#### Priority A (in order of priority)

- Northern Salt Lake City segment, Wasatch fault zone
- West Valley fault zone
- Provo segment, Wasatch fault zone – penultimate event
- Washington fault
- Rozelle segment, northern Great Salt Lake fault

#### Priority B (not in order of priority)

- Cedar City - Parowan monocline / Paragonah fault
- Enoch graben
- Clarkston fault
- Gunnison fault
- Scipio Valley faults
- Faults beneath Bear Lake
- Eastern Bear Lake fault
- Bear River fault zone

### Ground Shaking/Site Conditions

- The working group did not develop specific, new priorities for 2010; however, a continuation of on-going work was recommended.
  - Update and maintain the Wasatch Front Community Velocity Model (CVM); include latest shear-wave-velocity data.
  - Use Wasatch Front CVM to evaluate the importance of basin structure (e.g., depth of unconsolidated and semi-consolidated sediment, basin edge effects, steep basin boundary effects, and focusing) on strong ground motions.
  - Collect additional and/or re-analyze deep-basin-structure data (gravity, seismic, and geologic).
  - Expand Wasatch Front CVM to include Tooele and Rush Valleys to the west.
  - In cooperation with the USGS National Seismic Hazard Mapping (NSHM) project, develop site-amplification and basin models to prepare large-scale probabilistic and scenario urban ground-shaking maps for the Wasatch Front.
  - Characterize shear-wave velocities down to R1 (boundary between unconsolidated and semi-consolidated sediments) and R2 (boundary between semi-consolidated and consolidated bedrock) along the Wasatch Front.

- Use Advanced National Seismic System (ANSS) data in ground-motion studies along the Wasatch Front.
- Continue laboratory dynamic soil testing to model non-linear soil effects.
- Perform passive instrumental monitoring to better characterize geologic site conditions.
- Develop earthquake site-conditions maps for southwestern Utah.

### **Liquefaction**

- Investigation of the structural relationship between the Warm Springs and East Bench faults (sub-sections of the Salt Lake City segment of the Wasatch fault zone).