

**RESULTS OF THE FEBRUARY 14, 2008
UTAH LIQUEFACTION ADVISORY GROUP MEETING**

Steve Bartlett, Facilitator
Barry Solomon, UGS liaison and recorder

Members present:

Steve Bartlett, U of U
Travis Gerber, BYU
Grant Gummow, UDOT
Mark Petersen, USGS
Dave Simon, SBI
Barry Solomon, UGS
Aurelian Trandafir, U of U
Bill Turner, Earthtec
Les Youd, BYU

Guests:

Zahra Amini, U of U
Chris DuRoss, UGS
Ashley Elliott, UGS
Ed Fall, Ut. Div. Water Resources
Dan Gillins, U of U
Rich Giraud, UGS
Dan Hinckley, U of U
Bart Leeftang, U of U
Bill Lund, UGS
Greg McDonald, UGS
John Rice, USU
Esther Stokes, SBI

ACTION ITEMS

1. Steve Bartlett, Travis Gerber, Barry Solomon – Meet with Nancy Barr, Utah Division of Emergency Services, to determine the availability of a Pre-Disaster Mitigation Grant from FEMA for mapping liquefaction hazards in Utah County.
2. Steve Bartlett – Draft a letter for Rick Allis, UGS, in support of University of Utah Co-operative funding for data collection in Utah and Davis Counties.
3. Steve Bartlett – Discuss cost and method of funding for USGS CPT with Tom Holzer, USGS
4. Steve Bartlett, Travis Gerber, Dave Simon, Barry Solomon – Develop NEHRP 2009 proposal.

PRIORITIES FOR 2009 STUDIES

- 1) University of Utah
Develop new techniques for mapping the liquefaction potential of under-sampled geologic units, estimating the predictive accuracy of the analyzed units, and analyzing the uncertainty of results.
- 2) University of Utah, Brigham Young University and Utah Geological Survey
 - a) Collect and analyze subsurface geotechnical data to identify under-sampled geologic units and data-collection requirements for Utah Valley to support the development of techniques described in item 1, using new, detailed Quaternary

geologic mapping by the UGS for correlation of surficial geology with subsurface data.

- b) Conduct similar data collection and analysis for Davis County.
- 3) University of Utah and Simon-Bymaster
Conduct additional CPT subsurface investigations to resolve the origin of potential fault vs. lateral-spread offsets inferred in earlier studies of downtown Salt Lake City, and to provide additional data for cross-validation of under-sampled geologic units.
- 4) University of Utah
Collect and analyze subsurface data for comparison of the liquefaction hazard mapped using the Liquefaction Potential Index and using probabilistic techniques in Salt Lake Valley.
- 5) University of Utah
Develop an “Importance Matrix” to determine the appropriate level of ground shaking to use in liquefaction-hazard assessments based upon building use and displacement thresholds.
- 6) University of Utah
Develop techniques to evaluate liquefaction-induced large lateral deformations on gentle slopes by analyzing the Farmington Siding landslide complex, Davis County.

MEETING SUMMARY

PRESENTATIONS AND SPEAKERS:

1. Steve Bartlett – Review of 2007 ULAG items.
2. Daniel Hinckley – Settlement mapping of Salt Lake Valley.
3. Zahra Amini – Post-cyclic tests on Lake Bonneville silty sands.
4. Daniel Gillins –
 - a. Mapping of undersampled geotechnical units.
 - b. Implementation of liquefaction-hazard maps in HAZUS.
 - c. Real-time lateral spread maps.

DISCUSSION ITEMS:

A discussion was initiated by Mark Peterson to provide guidance for future NEHRP proposals. One of the goals of NEHRP is to develop new analytical techniques to evaluate earthquake hazards such as liquefaction. Once these techniques are developed, other avenues of funding should be used to apply the techniques elsewhere in the production mode. ULAG will attempt to obtain a Pre-Disaster Mitigation Grant from FEMA to continue mapping the liquefaction hazard along the Wasatch Front using techniques developed for Salt Lake Valley. Our 2009 NEHRP proposal will focus on the development of new techniques for cross-validation and uncertainty analyses for under-sampled geologic units, and implementation of the techniques using newly completed Quaternary geologic mapping not available at the time of earlier hazard-mapping efforts.

Another important goal of ULAG is to ensure that new liquefaction-hazard maps developed by ULAG participants are used by local governments and geotechnical consultants when planning for new development. Dave Simon described the use by Draper City of maps produced from NEHRP grants and incorporation of the maps into the city's geologic-hazards ordinance.