Tuesday, October 23, 2012

Location: Aviator’s Restaurant, Sacramento Executive Airport
6151 Freeport Blvd., Sacramento, CA.
Lots of free parking! [Link to map]

Speaker: Darren Mack and Drew Kennedy, SAGE, Inc.

Topic: Bear River Canal Emergency Repair Project,
Colfax, California

Agenda:
5:30-6:30pm – Social hour
6:30-7:30pm – Dinner
7:30-8:30pm – Speakers – D. Mack & D. Kennedy
8:30-8:45pm – Questions and Response

Meeting Cost: $30 members (with RSVP) and $35 non-members
There will be a $3 surcharge for no RSVP
$10 students (no surcharge for student walk-ins)
The FIRST 5 students to RSVP are free
Student Sponsorships welcomed! Sponsor a student for $20

You may RSVP and pay by PayPal at -- [http://www.aegsacto.org](http://www.aegsacto.org) or
RSVP by sending an email to: Tim.McCrink@conservation.ca.gov
Bear River Canal Emergency Repair Project, Colfax, California

Darren Mack, Associate Engineer/Engineering Group Manager
Drew Kennedy, Associate Geologist/Geosciences Group Manager
Sanders & Associates Geostructural Engineering, Inc. (SAGE)

The failure of a 55-foot-long section of PG&E’s Bear River Canal near Colfax, California, disrupted a major source of water for western Placer County, affecting thousands of residents. SAGE worked with PG&E to evaluate the geologic/geotechnical conditions of the failure area and perform a rapid alternatives analysis to evaluate various measures to restore water services to the affected customers.

The selected repair procedure consisted of placing approximately 2,000 cubic yards of rapid-setting, unreinforced cementitious fill to replace the slope materials lost in the canal failure. This created a stable subgrade for a new, 116-foot-long, at-grade, reinforced concrete flume section, reducing the need for personnel or equipment within the potentially unstable failure zone. Lateral stability for the fill mass was achieved using a reinforced concrete waler and five multi-strand tieback anchors post-tensioned to 350 kips each. The anchors were installed concurrently with the flume construction using limited-access drilling equipment winched down the slope face. Adjacent slopes were supported with soil nails covered in integrally-colored shotcrete to match adjacent soil and rock exposures. Pre-failure flows were restored to the canal just over six weeks after the failure occurred, and ten days ahead of schedule. The project was named the 2011 Geotechnical Project of the Year by the ASCE Sacramento Section.

The presentation will focus on the unique geologic conditions and geotechnical engineering aspects of emergency repair, including:

- An accelerated geologic and geotechnical investigation program;
- Characterization of the site to evaluate slope stability;
- The challenges associated with preparing the foundation and constructing repairs in an up to 30-foot-deep scarp;
- The importance of early constructability input during the alternatives analysis; and
- Implementation of the repair, including the need to support a 24/7 construction program.

Darren Mack has over 15 years of professional experience in the geotechnical engineering field, the last 7 of which are with SAGE, where he serves as Engineering Group Manager. He has a B.S. in Civil Engineering from U.C. Davis, and a M.S. in Geotechnical Engineering from U.C. Berkeley. He has provided geotechnical investigation, construction review and oversight, and project management for over 200 private and public projects in Northern California, and specializes in geotechnical investigations for levees, canals, hydraulic structures and pipelines, and mid- and high-rise buildings. He is the primary author for FHWA manual FHWA-CFL/TD-06-006, Rockery Design and Construction Guidelines, and is a co-author on three other papers published by EERI or ARMA.

Drew Kennedy has 22 years of professional experience in engineering geology, and is the lead geologist for the Geosciences Group at SAGE. He has a B.A. in Earth Sciences from U.C. Santa Cruz, and a M.S. in Applied Geosciences from San Francisco State University. He has evaluated geologic and seismic hazards for hundreds of private and public sector projects throughout Northern California, and specializes in water storage and hydropower facilities. These projects have required extensive geologic mapping, rock mass characterization, rockfall assessment, landslide evaluation, and/or earthquake fault study. He is the author/co-author of a number of papers and field trip guidebooks, and is a past Treasurer and Field Trip Chair for the AEG San Francisco Section. Drew currently serves as the Scholarship Chair for the AEG Sacramento Section.
We would like to take this opportunity to sincerely thank Geo-Ex Subsurface Exploration, our corporate sponsor for this meeting.

Geo-Ex Subsurface Exploration is a CA Small Business Enterprise, providing drilling services to the geotechnical, environmental and construction industries.

Geo-Ex is located in Dixon, CA and provides drilling services to the following sectors: private, local, state and federal agencies. Geo-Ex staff has built a solid reputation for providing quality service and technical excellence.

Tom Scott has managed consecutive drilling IDIQ’s for the United States Army Corps of Engineers and has been involved with the Department of Water Resources Levee Evaluation Program since 2007.

Geo-Ex’s corporate goal is to provide quality services, as well as innovative solutions, for our clients’ ever changing needs. We are committed to providing cost-effective solutions, quality project management, schedule control, and ensuring that all services are in compliance with all applicable regulatory requirements. Geo-Ex is also committed to teamwork and will assist each of our clients in their endeavor to be the best in their respective fields.

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