Association of Environmental & Engineering Geologists
San Francisco Section

ANNOUNCING THE AEG SAN FRANCISCO SECTION
MAY 2013 MEETING

Quaternary Geology and Geomorphology in the Sacramento Valley, California – A Key to Assessing Levee Foundation Conditions

Janet Sowers, PhD, P.G. of Fugro Consultants, Inc.

and

Developing a Geomorphic Approach to Assessing Levee Underseepage

Jennifer Mendonça Wilson, P.G. of Fugro Consulants, Inc.

MEETING DETAILS

Restaurant	**Date and Time**
Sinbad's	Tuesday, May 14, 2013
Pier 2 Embarcadero Street	6:00 pm—Social Hour and Sign-in
San Francisco, CA	7:00 pm—Dinner
Map	8:00 pm—Presentation

Cost: $45 Members; $50 Non-Members, $20 for Students

Menu

- Salmon Florentine
- Snapper
- London Broil
- Chicken Picatta
- Shrimp Louis
- Vegetarian Pasta

Reservations*: To RSVP, please fill out the online form at http://goo.gl/dJY83 by **12 PM, Friday, May 10th, 2013**

Driving Directions: From the Bay Bridge, take the Fremont Street Exit and the Folsom Street Ramp. Go left (east) on Folsom Street, then left (north) onto the Embarcadero (Herb Caen Way). The driveway for Sinbad's is on the right, south of the historic Ferry Building. Please watch out for the pedestrians and cyclists when turning into the driveway. Thank you.

BART Directions: Exit the Embarcadero Station; walk up Market Street toward the Ferry Building (less than ½ a mile toward the Bay and to the east). Cross Embarcadero and Sinbad's is located next to the Alameda ferry pier on the south side the historic Ferry Building.

Parking: $4 valet parking is available or there are meters located on nearby side streets.
*Please RSVP in advance. Walk-ins are welcome, but not guaranteed. No shows will be charged.

See next page for abstract and speaker biographies.

Quaternary Geology and Geomorphology in the Sacramento Valley, California – A Key to Assessing Levee Foundation Conditions

Janet Sowers, PhD, P.G. Fugro Consultants, Inc.
Associate Geologist

Dr. Sowers has been practicing geology and conducting research for over 30 yrs. Her technical specialties are fluvial morphology, karst processes, soil science and age dating. She holds a B.A. in Environmental Science from University of Virginia, Charlottesville, and M.A. and PhD graduate degrees in Geology from University of California, Berkeley.

Abstract - Flood protection infrastructure in California's Sacramento Valley typically is founded on unconsolidated Late Quaternary fluvial, basin, and estuarine sediments. The stability of these sediments as foundation materials depends on characteristics such as grain size, sorting, density, permeability, bedding, and cementation, which are largely a reflection of the geologic origin and history of the sediments. This talk will discuss the development of original 1:24,000 scale mapping of Quaternary geologic units, present examples of these maps, and provide an overview of Sacramento Valley Quaternary history and geomorphology.

Developing a Geomorphic Approach to Assessing Levee Underseepage

Jennifer Mendonça Wilson, P.G. Fugro Consultants, Inc.
Principal Engineer

Ms. Wilson has been practicing consulting geology in the Bay Area for 5 years. Her technical emphasis includes geologic hazards, engineering geology and geomorphology. She holds a B.S. in Earth Sciences from the University of California Santa Cruz, and an M.S. in Geology from San Jose State University.

Abstract – The migration of water through levee foundation materials by underseepage can lead to piping and levee instability during critical high-water stages. As part of regional levee evaluation studies, a geomorphic assessment approach was developed to identify areas of potential vulnerability to underseepage along levees within the Sacramento and San Joaquin Valleys. The approach integrated existing and new Quaternary geologic mapping with soil hydrologic classes and geomorphic data to develop a criteria matrix of relative underseepage susceptibility classes (very high, high, moderate, and low). These classes were assigned to levee segments according to the criteria matrix, with late Holocene and historical channel deposits judged to have very high susceptibility, late Holocene natural levee, overbank, and crevasse splay deposits having high susceptibility, and older alluvial fan and fine-grained, basin deposits having moderate to low susceptibility. Documented past levee performance issues were also evaluated and spatially analyzed using GIS and compared to the underseepage susceptibility mapping to help calibrate the susceptibility rankings based on historical events. The GIS analysis of past performance was designed to include discrete (point) data as well as continuous (line) data. Epistemic uncertainties include the completeness and locational accuracy of the levee performance data and precision in the surficial mapping. Preliminary results suggest a strong correlation between paleochannel, historical natural levee, and peat deposits and documented levee performance issues.

Thank you for the RSVP! See you on Tuesday, May 14th, 2013!