

# Association of Environmental and Engineering Geologists – Arizona Section

**Dinner Meeting:  
Wednesday, February 3, 2016**

**at  
SunUp Brewing Company, Phoenix**

**5:30 PM Mingling and Drinks**  
*Hosted by AEG Arizona Section*

**6:30 pm Dinner and 7:15 pm Presentation**

## **SPEAKER:**

**Gary S. Rasmussen**

*Engineering Geologist*

*President, Gary S. Rasmussen & Associates, Inc.*

## **PRESENTATION:**

**SURFACE GROUND RUPTURE FROM THE 1992  
M<sub>w</sub> 7.3 LANDERS EARTHQUAKE AS OBSERVED  
FROM THE AIR AND GROUND**

**Cost: \$25 AEG Member**

**\$30 Non-Member**

**\$15 Government**

**\$10 Students**

**Location: SunUp Brewing Company  
322 East Camelback Road  
Phoenix, Arizona**

RSVP by Tuesday at 5:00 pm, February 2, 2016 by email to [aeg.arizona@gmail.com](mailto:aeg.arizona@gmail.com)

## **BIOGRAPHY**

**Gary S. Rasmussen**

*Engineering Geologist*

*President, Gary S. Rasmussen & Associates, Inc.*

Gary has more than 45 years of experience as a consultant and practitioner of engineering geology. Gary graduated with his Bachelor of Science degree in geology from University of Arizona in 1967. He worked as an engineer for Leighton & Associates for a bit before starting his own engineering consulting firm in 1973, Gary S. Rasmussen & Associates, Inc. (GSRA). Gary is recognized as an expert in geologic hazards in southern California. He has consulted on and been an expert witness for various industrial and residential projects including earthquake fault investigations, landslides, groundwater studies, and liquefaction. Gary is a leader in the industry in paleoseismic investigations. He has been an active member of the geologic community including being a member of AEG for 46 years as well as co-founding the Inland Geological Society in 1985.

## **ABSTRACT**

### **Surface Ground Rupture from the 1992 Mw 7.3 Landers Earthquake as Observed from the Air and Ground**

The 1992 Landers earthquake resulted in surface rupture of approximately 70 km on five separate faults. Post surface rupture occurred on at least three additional faults. The surface rupture varied from 18 feet to a few centimeters. Detailed photographs were taken on both the ground and in the air (low altitude, low sun angle, oblique stereo for the aerial photos). In addition, the earthquake triggered many smaller earthquakes, including the Mw 6.2 Big Bear earthquake three hours later. The Big Bear earthquake was triggered by 9 cm of right lateral slip on the Santa Ana fault, which was previously thought to be a thrust fault. This combination of surface rupture and triggered earthquakes was unprecedented and put to bed the controversy that faults only moved by discreet segments on the same fault. Liquefaction along the Santa Ana fault resulted in a lateral spread, which based on many trench observations, appears to be a common feature of lateral spreads and faults.

