SDAG MEETING ANNOUNCEMENT

WEDNESDAY, January 18th, 2012

“Geo-Aspects of Multidisciplinary Study of Qhapaq Ñan – the Inka Road”

Presented by

Barry Keller, PhD PG CHG

Where: Emiliano’s Mexican Restaurant (Overlooking Admiral Baker Golf Course)
6690 Mission Gorge Road, San Diego, CA 92120
(619) 284-2460

When: 5:30 pm – Social Hour
       6:30 pm – Dinner
       7:15 pm – Program


Cost: $30 per person, $5 discount for members, STUDENTS: $20. Add $5 if you did not make a reservation

Reservations: Make your reservation online at www.sandiegogeologists.org no later than noon, Monday, January 16th.

RESERVATIONS CANNOT BE GUARANTEED AFTER MONDAY AT 12 NOON BUT THEY ARE ALWAYS PREFERRED OVER WALK INS.
SPEAKER ABSTRACT

GEO-ASPECTS OF MULTIDISCIPLINARY STUDY OF QHAPAQ ÑAN – THE INKA ROAD
Barry Keller, PhD PG CHG

Prior to the arrival of the Spaniards in 1532, the Inka empire was united by a road called Qhapaq Ñan (Inka Road) that extended north and south from the Inka capital of Cusco (now in Perú). This included various branches and extended as far north as southern Colombia and as far south as central Chile. In the 1400s, this may have been the longest “cultural” feature on the planet. The road was used for foot travel and llama-born cargos, among other things allowing the Inka rulers (called Inkas) to have fresh ocean fish for breakfast! The road construction showed the same amazing precision and consistency as the famed buildings of Cusco and Macchu Pichu.

The study of Qhapaq Ñan is taking place under the auspices of the UNESCO World Heritage Centre. The overall goal of the project is to establish the “dimension the state of conservation of natural and environmental resources” – meaning mainly description. In August, 2009, I participated in the study of sections in northern Chile, along with botanists, zoologists, geographers, ecologists, and some help from archaeologists.

The specific geologic goals were (apparently a standard UNESCO list): Rock type; Geologic formation; Name of rock; Presence of Quaternary deposits; Faults; Diacrasis (fractures); Geomorphologic units; Morphodynamics – mass wastage, erosion, and flooding. The geology of this part of Chile includes active volcanoes, huge ignimbrite sheets, tectonic-convergence related rocks spanning the Phanerozoic, copper deposits that have been mined since Inka times, desert varnish and pavement, and a large historic landslide that locally obliterated the Qhapaq Ñan. The extreme aridity of the Atacama Desert is interrupted by streams from the high peaks, with water quality ranging from potable to 100% salt saturated.

“27 F” – The Chile M = 8.8 Subduction Quake, 27 February 2010. In the Chilean press, “27 F” means that earthquake, similar to how “9-11” is understood in the US to mean the terrorist attacks. This was the world’s 6th biggest earthquake as recorded since 1900, part of a pattern in which 4 of the top 10 have occurred in the past 8 years. The 27 F quake triggered a tsunami that did extensive coastal damage. I was on top of the northern end of the 700 km N-S rupture zone, where very strong motion continued for at least 3 minutes and nearly continuous aftershocks occurred for days (and a couple in the past 2 weeks!). Structural damage was most prominent in old, unreinforced adobe structures. Many roads were also damaged. I will show photos from the Chilean newspapers and compare the motion and effects to other quakes, including Northridge, Haiti, Mexicali, and Japan 2011.

SPEAKER BIO

SPEAKER: DR. BARRY KELLER

Dr. Keller was born in San Diego, and has lived most of his life in California, with intervening stints in Washington State, France, and Chile – where he has a house and experienced the Mw = 8.8 “BIG ONE” in February 2010. He has a BS in geology from Caltech, MS in geophysics from University of Washington, and PhD in geophysics from UCSB. At Caltech, he took “Elementary Seismology” from Prof. Charles Richter, the last year that Richter taught classes. As a grad student at UCSB, he operated...
the seismograph drums and identified the earthquakes. His PhD topic was seismic and gravity
modeling of the Santa Barbara area. He currently works as a consulting hydrogeologist, and is Chair
of the Board of Water Commissioners of the City of Santa Barbara. Dr. Keller also works frequently
on environmental studies in Chile.

2012 SDAG MEETING SCHEDULE – Mark your Calendars!
Meetings are usually on the 3rd Wednesday of the month but may change to accommodate speaker
and meeting place schedules. Check here for updates!

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 15, 2012</td>
<td>Mike Buga - San Jacinto Fault Work Update - Clark Lake and Hog Lake</td>
</tr>
<tr>
<td>March 21, 2012</td>
<td>Dr. Scott Burns - AEG Jahns Lecture on Subduction EQ's - Joint Mtg. with the EERI</td>
</tr>
<tr>
<td>April 18, 2012</td>
<td>Geology Student Presentations</td>
</tr>
</tbody>
</table>

2011 EXECUTIVE COMMITTEE

**PRESIDENT** – Todd Wirths; Cogstone Resource Management, Inc.
Ph: (858) 337-0098; todd@wirths.com

**VICE PRESIDENT** – Cari Gomes; cg7783@yahoo.com

**TREASURER** – Brian J. Olson; FSR Engineering; Ph: (858) 750-9243; bolison@fsengineering.com

**SECRETARY** – Jennifer Bauer; geologyjen@yahoo.com

**PUBLICATIONS** – Lowell Lindsay; Sunbelt Publications;
Ph: (619) 258-4911, x111; fax: (619) 258-4916; lindsay@sunbeltpub.com

**WEBMASTER** – Carolyn Glockhoff; Caro-Lion Enterprises, Ph: (858) 549-3396; carolyn@caro-lion.com

CALL FOR PAPERS FOR THE SDAG 2012 ANNUAL FIELD TRIP
GUIDEBOOK Waiting for Tsunami: Coastal Processes and Geologic
Hazards of north San Diego County

In this trip, we will explore the southern California coastline from La Jolla north to
San Clemente. We will tour sites of geologic interest including: tsunami features,
active coastal erosion, landslides, a Miocene volcanic plug, estuaries, and efforts
to restore brackish water areas.

SDAG seeks new manuscripts based on original work in the broad fields of
regional geology, sedimentology, soil, tectonics, hydrogeology, paleontology,
engineering geology, petrology, geothermal resources, geomorphology, paleoclimatology, landslides, and related
fields. Articles on any facet of the natural or cultural history of northern San Diego County and vicinity are also
welcome.

**Deadline for submission of abstract: February 29, 2012.**

Please submit the following information when submitting abstract:

- Title,
- Authors and affiliation,
- Address, e-mail, and telephone numbers for the corresponding author.

Submit abstract by e-mail to Cari Gomes: cg7783@yahoo.com
PRESIDENT’S CORNER

Welcome to the New Year! As the new President of the San Diego Association of Geologists, I would like to begin by welcoming new officers Cari Gomes (Vice President), Brian J. Olson (Treasurer), and Jennifer Bauer (Secretary). I also want to thank the outgoing president, Chuck Houser, for his four years of dedication and for keeping SDAG strong. Chuck’s dry wit, generosity, and broad knowledge of our trade always made meetings interesting and enjoyable.

Our December holiday meeting at the San Diego Natural History Museum was attended by about 130 folks and was a great success. I want to thank everyone involved for their efforts to secure a delightful evening, including Chuck Houser, Dave Bloom, Greg Cranham, Diane and Monte Murbach, Taco Express for great fare, and of course the speaker, Dr. Tom Deméré.

I had a lot of fun (and a little anxiety!) putting together last November’s field trip at Picacho State Recreation Area and the Mesquite mine. During our tour of Picacho’s outcrops I had intended to take lots of photos, but I didn’t take one, I was just so relieved that the trip was unfolding so nicely. Happily, Carol and John Teasley provided me with a bunch, thank you! One lingering item, some of you may recall, is that Picacho SRA is one of dozens of State Parks slated for closure this summer. Picacho park rangers have taken “a two-pronged approach” to resolve the park’s budget problems by reducing operating costs and increasing revenue (it’s still cheap!). At the same time, they are pursuing alternative energy sources to power the park, and are seeking donations and partnerships to help keep the park open to the public. If you are interested or have ideas, you can contact Ranger Robin Greene at (760) 996-2963 or rgreene@park.ca.gov.

A facebook site has been set up to act as a discussion arena, http://www.facebook.com/savepicachostaterecreationarea. Just by clicking “like this” will add to a tally that can be used as a tool to keep the park open. Another way to help: go to www.leginfo.ca.gov to contact your assembly members and senator: click on ‘your legislature’ at the bottom, type in your zip code and your state representatives will be shown. Call or mail a letter to them, tell them how you use and enjoy the park, ask what Sacramento plans for Picacho - we need to let them know that that the various resources the park has to offer (existing facilities, wildlife, historical, cultural…. geological!) will be in danger of vandalism, etc., if the public is kept away from visiting the park. The competition for State Park preservation is fierce; other grass-roots “Save (your park name here) Park” attempts have been established for other facilities. My advice: go visit, enjoy, and participate!

Todd Wirths
President
Hargis + Associates, Inc. is an environmental consulting firm specializing in hydrogeology and engineering. We are headquartered in San Diego, California and have offices in Mesa and Tucson, Arizona. Our practice areas include all aspects of hydrogeology and engineering.

As a client service organization, we pride ourselves in being attentive and efficient in meeting our client's needs and solving their problems. In addition to our technical expertise, communication and responsive coordination are hallmarks of our reputation.

We invite you to explore our website to learn more about our firm and the services we provide. We welcome the opportunity to discuss our consulting expertise directly with you.

Contact: Dr. David R. Hargis

Cascade Drilling, L. P.

Contact: Dan Chambers

Mobile Geochemistry is an industry leading provider of environmental lab services. With ten mobile labs and five direct push sampling trucks and unparalleled experience, H&P’s repertoire of environmental lab services includes many forms of environmental lab sampling techniques all the way to on site field analysis services. H&P has successfully and accurately performed environmental lab services delivering quality results to our clients for over 16 years.

2470 Impala Dr., Carlsbad, CA 92010
(800) 834-9888 Contact: Suzie Reed

Since 1991, Mission Geoscience has provided consistent and reliable professional services with our dedicated staff of highly credentialed professionals, who are committed to both timeliness and cost-effectiveness as the cornerstones of their work. MISSION’s staff remains amongst the most highly respected firms in the environmental and geotechnical industry, which is why many of our clients tend to assign us their most difficult and challenging projects.

http://www.missiongeoscience.com/

Contact: Jim Ashby
Tetra Tech is a leading provider of consulting, engineering, and technical services worldwide. We are a diverse company, including individuals with expertise in science, research, engineering, construction, and information technology. Our strength is in collectively providing integrated services—delivering the best solutions to meet our clients’ needs. http://www.tetratech.com

Contact: Dave Bloom

- Dr. Pat Abbott - SDSU Prof. of Geology and Geophysics, Emeritus
- Sally & Dennis Avery
- Dr. Richard Berry - SDSU Prof. of Geology and Geophysics, Emeritus
- Curtis Burdett
- Joe Corones - City of San Diego
- Greg Cranham - Consulting Geologist
- Dr. Margaret R. Eggers, CHG - Eggers Environmental, Inc.
- William J. Elliott, Engineering Geologist
- Phil Farquharson - CG-Squared Productions
- Carolyn Glockhoff - Caro-Lion Enterprises
- Cari Gomes
- Dr. Sarah Gray
- Rob Hawk City of San Diego

Cardno ERI, we're experts at providing safe, high quality, cost-effective solutions to environmental concerns. We're large enough to tackle extensive, complex projects, yet small enough to provide exceptional service in a timely manner while paying close attention to controlling costs. In short, we combine the expertise, technology, and dedicated service you need to receive the best possible solutions to your environmental concerns. http://www.cardnoeri.com

Contact: Steve Zigan

- Jonas & Associates
- Lowell A. Lindsay and Diana Lindsay - Sunbelt Publications/AESE
- Dr. Monte Marshall - SDSU Prof. of Geology and Geophysics, Emeritus
- Monte and Diane Murbach - Murbach Geotech
- Ninyo & Moore - Jonathan Goodmacher
- Doug Peeler
- Les Reed – Geotechnical Exploration Inc.
- Bob Smillie – TerraCosta Consulting Group Inc.
- David and Jan Steller ("two-fer" - thanks!)
- Dr. Anne Sturz
- Sue Tanges - Southland Geotechnical Consultants
- Terra Costa Consulting Group, Inc.
- Mary Walke
- Carole L. Ziegler

Add yourself to this list - Sponsors, Corporate Sponsors, and Patrons provide a significant portion of SDG’s and SDAG’s operating and scholarship budgets. SDG is (a 501(c)3 public benefit nonprofit educational corporation). For more information, please see our Sponsorship Form

ANNOUNCEMENTS:

Plan to share your research with a presentation or a poster
2012 Desert Symposium

Presentation Theme: Life in the Desert: Adaptations to Environmental Extremes
Field Trip Theme: Search for the Pliocene: Southern Exposures
Desert Studies Center, Field Trip April 21 - 23, 2012 Zzyzx, California Additional information to follow. Please forward this information to other interested individuals and invite them to send their email addresses to wpresch@fullerton.edu. California State University, Fullerton

SDAG - 6
Original 1/4/2012
Ricardo Breceda | Accidental Artist

at

theNAT

SAN DIEGO NATURAL HISTORY MUSEUM

Presentation by
Author Diana Lindsay & Artist Ricardo Breceda
Sunday, January 22, 2012, 4:00 pm
Book signing immediately following presentation
FREE EVENT | Book available at museum store

Visit www.sdnhm.org or call 619-255-0210 for more info
Join Ricardo and Diana for a no-host reception after the signing at The Prado Restaurant in Balboa Park
SME So Cal Field Trip
Date: Saturday, January 28, 2012
Time: 9 AM Sharp at the Visitor Center
Place: Borax Visitor Center
Field Trip leader is Brandon Griffiths - Rio Tinto - Borax
Antelope Valley Directions: Golden State Freeway (5) to
Antelope Valley Freeway (14 North) to Highway 58 East, Exit Borax Road. Go left and follow the
signs
Peter Jahn
Society of Mining Engineers Southern California Mining Section

South Coast Geological Society - 2012 is almost here and you are invited to join us on a special night for our
first meeting of the year, TUESDAY January 10th. You read that correctly, we have moved the first meeting
of the year to a Tuesday evening. The meeting will be held at our usual meeting place, the Club Doubletree in
Santa Ana. Dr. Jeff Knott of California State University Fullerton has stepped up to be our first speaker of
2012. He will be presenting a talk titled "Reconstructing Late Pliocene To Middle Pleistocene Death Valley
Lakes And River Systems As A Test Of Pupfish (Cyprinodontidae) Dispersal Hypotheses."
Remember to sign up by Friday January 6th at noon to avoid a $5 late fee. Don’t forget, the meeting is
TUESDAY JANUARY 10th! http://www.southcoastgeo.org/meetings.shtml

SEEKING JOB OPPORTUNITIES

Seeking a Career in Southern California - Motivated and enthusiastic mid-level geotechnical project
engineer with 4 years of experience in linear, underground and maritime infrastructures, seeking to
leverage her diverse project experiences to continue her technical career development in a dynamic
growing firm. Knowledge of geotechnical calculations and numerical simulations to study the behavior of
the interaction of soil-structure with 2D and 3D software, to design the foundation in the safest and most
economical manner. Wide experience in preparing and writing proposals and technical reports. Experience in leading and conducting geological and geotechnical field work. Used to working in a team
environment to successfully deliver projects. Interested in informational interviews as well employment
opportunities. Contact: Carme Cervantes, carmecervantes@hotmail.com, 4250 4th Avenue, San
Diego 92103, C.A. (858) 888-3716

Qualifications Summary and Objective: I have 14 years experience directing surface water quality
monitoring programs with a proven record of excelling in monitoring plan implementation, quality
control, public notification and continuous improvement in operational effectiveness and efficiency. I
have built and maintained relationships with key staff in academia, industry, and all levels of government
in San Diego and California. I have a widely applicable skill set which includes: analytical thinking,
communication and writing skills, data analysis and management, inter and intra- agency project
coordination, and staff supervision and training. My objective is to obtain a career position with an industry leader where I can contribute my skills to build the success of my employer as well grow professionally. Detailed work experience, education and more at www.linkedin.com/in/cbclifton2010. Email cbc2006@cox.net or 619-964-1776. Contact: Clay Clifton

"ENGINEERING GEOLOGIST- MS in Geology, 13 years of the industry experience (CA, NY/NJ, overseas), California P.G., proficient in methods of subsurface exploration and geotechnical hazard evaluations, geophysical surveys, construction quality control, geotechnical engineering analyses, special interest in earthquake-hazard and seismic design related applications, strong problem solving and organizational skills, enjoy being challenged. I worked in San Diego in 1998-2004 and would love to move back. Detailed resume available upon request. Anna Fyodorova, Afyodorova103@gmail.com."

JOB OPENINGS!

Hargis + Associates, Inc is looking for a motivated entry level hydrogeologist with relevant course work in hydrogeology, geochemistry, and environmental sciences to join our San Diego office. http://www.hargis.com/jobs-hydrogeologist.html. We are also seeking an engineer with extensive experience in the mining industry for a position in our Tucson office. This position is well suited to a self starting individual with strong ambitions for success and promotion within Hargis + Associates. http://www.hargis.com/jobs-senior-staff-engineer-mining.html.

Seeking a Career in Southern Vice President Environmental Services (VPES)? Seeking a successful VPES (seller/doer) to help grow an environmental consulting company in San Diego, CA. The main focus is new client sales and client retention. Other duties will include technical direction and management for client projects. The primary focus for sales and technical project management are in the areas of air quality, CEQA permitting, water discharge, stormwater permitting, regulatory compliance, hazardous materials and waste management, and environmental mitigation management. 5+ years of experience, minimum Bachelor’s Degree, and the ability to bring in and retain a large book of business is required. Candidates from the Orange County, CA, area will also be considered. Inquiries and resumes to: resumes@proconnectweb.com

Request for Sponsors: 2012 SDAG/SDGS and Publication SPONSORS

On behalf of the San Diego Geological Society, Inc. (SDGS), a public benefit 501(c)3 nonprofit educational corporation, we would like to request tax deductible Donations at our San Diego Association of Geologists (SDAG) The list of paid Sponsors and the forms to become a Sponsor are located on the SDAG web site at: http://www.sandiegogeologists.org/Sponsors.html. Your donation will further the SDGS mission to promote geology and related fields in the greater San Diego region, operating through the San Diego Association of Geologists (SDAG), a committee of SDGS. To achieve our primary educational objective, we organize frequent field trips and maintain a program of monthly meetings featuring speakers on current geological topics. We also publish field trip guidebooks and other publications related to geology and natural history. We encourage scholarship and research by awarding scholarships from the elementary through graduate levels. With your $100 "EMERALD" donation, your name/business will be listed as a sponsor on the SDAG web site (http://www.sandiegogeologists.org/) and in the monthly SDAG meeting newsletters. With your
Parting Lineation...On July 1, 1862, Congress passes the Pacific Railroad Act during the Civil War. The legislation authorizes the construction of a transcontinental railroad. The act provides for loans of $16,000 a mile for construction over flatland and $48,000 per mile for construction in the Sierra Nevada. An 1863 survey conducted by the California State Geologist will conclude that the Sierra Nevada begins on the first low rise seven miles east of Sacramento - 20+ miles west of where the steeper Sierra Nevada grades actually start. This curious decision will net the Central Pacific Railroad more than $1 million in additional federal construction loans. Letter from State Geologist J.D. Whitney to California Governor Leland Stanford