

Association of Environmental and Engineering Geologists

Inland Empire Chapter

of the Southern California Section

Vol.8 No. 2

February Newsletter

Historical Development of the Petroleum Industry in California

(Bonus: Update on current SMGB activities)

Stephen Testa,

Executive Officer, California State Mining and Geology Board (SMGB)

Thursday, February 16, 2012

6:00 – Social	Temecula Library, Community Room A
6:30 – Dinner	Temecula Library, Community Room A
7:30 - Speaker	Temecula Library, Community Room A

Location

Temecula Public Library, Temecula, CA

(Meeting Cost \$25; Students \$5); see meeting details on page 3

**AEG-IE
Chapter Officers**

Chapter Chair
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Consulting Geologist
(760) 885-0232
debbie_kunath@ymail.com

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(951) 834-2619
kerry@catogeoscience.com

Abstract

Stephen M. Testa, stephen.testa@conservation.ca.gov

California has a rich heritage in oil. Oil seeps have been noted by Native Americans and Spanish explorers in the vicinity of Los Angeles since about 1543. The post gold rush era of the mid-to-late 19th Century represented the first major phase of oil exploration and production in California. It was a period when the State legislature was concerned about a declining economic climate and explored means to spur the economy, and encourage growth and development.

Some individuals, such as Benjamin Silliman, Jr. and William P. Blake, expressed optimism. Josiah D. Whitney, State Geologist and Director of the first California Geological Survey (1860-1874) presented a pessimistic view of petroleum as a true commodity, and this pessimism eventually sealed the fate of the Survey. By the turn of the Century, things would however turn around. The Los Angeles City Oil Field was discovered in 1892 by Edward L. Doheny, Sr., and would be the most historically significant field in California, and its discovery would have profound impact for the industry worldwide. The discovery, situated in what is now Echo Park, would set off California's first oil boom during the revitalization period (1875-1900). Being in close proximity to downtown Los Angeles, its discovery sparked one of the first major land booms in the city.

Webmaster & Newsletter Editor**Dr. Kerry Cato,**

Cato Geoscience, Inc.

kerry@catogeoscience.com**Field Trip Chairman****Mark Spykerman**, Earth Systems Southwest,mspykerman@earthsystech.com**Membership Chairman****Richard Orr**, Leighton Group,
Rorr@leightongroup.com

Past Chairs; Frank Jordan, 2005, 2011; Gary Wallace, 2006; Rick Gundry, 2007, Mike Cook, 2008; Kerry Cato, 2009; Douglas Johnston 2010.

The AEG Inland Empire Chapter Newsletter is a monthly publication of the Inland Empire Chapter of the Southern California Section, Association of Environmental and Engineering Geologists. For more information visit the Chapter website:
<http://www.aegsc.org/chapters/inlandempire>

Submittals: Deadline, 28th of the month. Employment notices, job position announcements, and advertisements can be posted for a minimal fee. Newsletter circulation about 170 in greater inland areas of Southern California, and elsewhere.

E-Mail Address changes:
aeiginland@gmail.com

AEG

Free
Student
Memberships

Students, invest
in **YOUR**
CAREER!

Abstract (continued)

By 1898, the Los Angeles field made up 65 percent of the total quantity of oil produced in California for that year. Within a few years there were over 200 oil companies and 2500 wells within the city limits. The Los Angeles City Field would become one of the major oil producers in the world. Of most importance is the effect this field had on the industry, attracting many due to its peculiar location to downtown Los Angeles.

The discovery of the Los Angeles City Oil Field would soon lead to other fields being discovered throughout the Los Angeles Basin during the early 20th Century, including the proving of seven giant fields (Brea-Olinda, Beverly Hills, West Coyote, East Coyote, Montebello, Richmond and Santa Fe), with the Los Angeles Basin area becoming one of the major oil-producing areas in the world. It was also during this time that Doheny would be instrumental in the conversion of coal-to oil-burning locomotive engines, which serve as the harbinger of a new era of petroleum-fuel transportation.

During the early 1920s, California became the most oil productive state in the country, and by 1923, one of every five barrels of oil was produced from the Los Angeles Basin. Notably, thirteen fields would be discovered along what is referred to as the Newport- Inglewood Structural Zone (NISZ). The northwest- southeast oriented Newport-Inglewood Structural Zone is an active fault characterized by major right- lateral movement in the southeastern portion of the Los Angeles Basin. Over 3.4 billion barrels of oil have been produced from these fields since the first field, Beverly Hills, was discovered in 1900.

Most of the subsequent production was derived from discovery of the super giant Huntington Beach and Long Beach oil fields in 1920 and 1921, respectively. Dramatic production and decline trends during the 1920s and 1930s directly reflected the closely spaced town lot drilling campaigns and unrestricted wasting of reservoir pressure. Nearly 40 percent of the total oil production for Southern California has come from fields situated along this structural zone.

By the 1950s, California in total cumulative output produced 21 of the country's 81 top oil fields, with three fields in the top ten, and by the early 1980s, potential offshore production was in the forefront of California's oil industry.

In 1957, the city of Los Angeles celebrated the rich oil heritage of Signal Hill with the symbol of oil derricks on the Seal of the County. Political correctness concerning the county's faith-based heritage resulted in removal of this symbol, along with the religious symbolism.

Speaker Biography

For over 25 years, Testa has worked as a consultant for a variety of firms. From 1976 until August 2005, he served as an engineering and environmental consultant for such firms as Bechtel, Dames and Moore, Converse Consultants and Engineering Enterprises, and in 1992, as Chief Executive Officer of the international consulting firm Applied Environmental Services, he took his firm public. Stephen M. Testa entered public service in August 2005 when he was appointed Executive Officer of the California State Mining and Geology Board.

Testa is the author of numerous books and over 125 publications, including *Geological Aspects of Hazardous Waste Management*, *The Reuse and Recycling of Contaminated Soils*, and *Restoration of Contaminated Aquifers: Petroleum Hydrocarbons and Organic Compounds*, *Petroleum in the Environment*, and most recently *One Man's Planet – Earth in Today's Political Culture*. He has served as an instructor at USC and CSU Fullerton, and has provided numerous workshops and technical presentations.

Testa is the Past-President of the American Geological Institute (AGI) and the American Institute of Professional Geologists (AIPG), past Editor-in-Chief of American Association of Petroleum Geologists – Division of Environmental Geosciences' (AAPG-DEG's) peer review journal "Environmental Geosciences", and the recipient of the AIPG's Martin Van Couvering Award and Honorary Membership, AAPG-DEG's Research Award, and the Roy Shlemon Geology Mentor Honorarium for excellence in application of applied earth science. He currently writes editorials for various national venues including AGI's flagship *EARTH Magazine*. In his spare time, Steve is also working on a book "Gas Leaks and Oil Spills" with Jim Jacobs for McGraw Hill Publishers.

OTHER MEETINGS

AEG-Southern California Section:

Feb 16, 2012 (Thursday). Presentation: ***"Avenue 45 Tunnel in Los Angeles – Geotechnical and Geological Investigations."*** Speaker: **Fred Burnett**, CEG, City of Los Angeles, Dept. of Water & Power. Location: Victorio's Restaurant, North Hollywood. For more information visit <http://www.aegsc.org/>

ASCE (Los Angeles Section): Feb 8, 2012 (Wednesday).

Presentation: ***"Overview of Geophysics Used for Design of Natural Gas Pipelines and for Detection of Subsurface Voids at an Underground Gas Storage Facility."***

Speaker: **Jeffrey R Keaton**, PhD, PE, PG, D.GE, Senior Principal Engineering Geologist, AMEC. Location: Zendejas Mexican Grill, Rancho Cucamonga, CA. For more information visit www.ascelasection.org

EERI (San Diego Chapter): 1-DAY SHORT COURSE:

Mar 30, 2012 (Friday), 8am-5pm. Topic: ***"Analysis, Design, and Testing of Pile Foundations."*** Instructor: **Prof. Bengt Fellenius**. Location: Grand Pacific Palisades Resort & Hotel, Carlsbad, CA. **SEE BROCHURE**

ATTACHED TO THIS NEWSLETTER. For more information visit <http://www.eeri.org/about-eeri/regional-chapters/>

IGS: Feb 3, 2012 (Friday), 6pm-social,7pm-speaker.

"Life-Cycle Economic Analysis of Water Wells—Considerations for Design and Construction." Speaker: **Mr. Marvin F. Glotfelty, RG, 2012 NGWA McElhiney Lecturer.** Location: LSA & Associates Office, Riverside, CA. For more info visit <http://www.inlandgeo.org/>

SCGS: Feb 6, 2012 (Monday). ***"Computer Based Stereo Photo Analysis for Geologists"*** (In 3-D). Speaker: **Woody Higdon, Geo-Tech Imagery.** Location: Double Tree, Santa Ana. For more info about SCGS visit: <http://www.southcoastgeo.org/>

SDAG: Feb 15, 2012 (Wednesday). ***"San Jacinto Fault Work Update – Clark Lake and Hog Lake."*** Speaker: Mike Buga. Location: TBA.

- March 21, 2012 (Wednesday). ***"Subduction Zone Earthquakes"*** Speaker: Dr. Scott Burns, AEG Jahns Lecture. For more info visit <http://www.sandiegogeologists.org/>

SME: Feb, 2012 Meeting TBD. For more information visit <http://www.mine-engineer.com/socalmining/>

February AEG-Chapter Meeting Info

Temecula Public Library

30600 Pauba Rd., Temecula, CA, (951) 693-8900

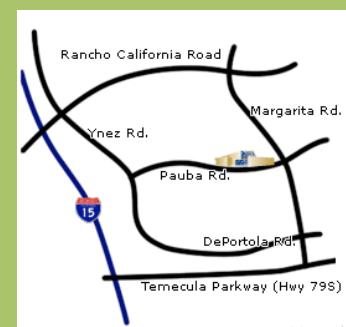
- Social/Dinner: Community Room A
- Presentation: Community Room A

Directions:

From I-15, EXIT at Rancho California Rd. and proceed 0.2 miles northeast to the first light at Ynez Rd and take a right (south). Proceed 0.8 miles southeast on Ynez to the third light at Pauba Road. Take a left on Pauba Rd. and proceed 0.9 miles northeast. The Temecula Public Library is the large building on the north side (left) of the road.

Go through the Library's main sliding glass door entrance and Community Room A will be on the right past the large glass sculpture.

SEE MORE DETAILED MAP ON LAST PAGE



Dinner Menu (catered by Blue Peacock Cuisine Of India Restaurant):

- Naan (Tandoori) Bread	- Lamb Curry
-Chicken Tikka Masala	-Basmatti Rice
-Chicken Curry	-Vegetable Pakoras
-Non-alcoholic drinks and water	

Cost: Professionals \$25; Students \$5

RSVP: RSVP by Close-Of-Business Monday February 13, 2011 by emailing : aeginland@gmail.com

AEG
*** **Free Student Memberships** ***
Students, invest in **YOUR CAREER!**

ANNOUNCEMENTS

Governor Proposes to again eliminate the SMGB

Many of you are aware that there was an attempt to de-fund the State Mining and Geology Board (SMGB) under the previous Governor. Now there is another attempt, by Governor Brown this time, to de-fund the SMGB. Please see the attached letter for an explanation of the Board's functions. The SMGB is an essential part of the setting of policy regarding geologic hazards and mining in California. The SMGB is the only policy-setting and appeals body in the State that is pro-mining. The attempt to de-fund the SMGB makes no sense, as there is no general fund money used to fund it, and the services they provide are invaluable. Please write the governor at the address on the letter and let him know that you value the SMGB's input, and indicate its importance to your industry (geologic hazards and/or mining).

Thank you for your attention,
Jay J. Martin, CHJ Consultants

See SMGB letter later in this newsletter

Gregg CPT 1-Day Short Course

April 6, 2012, Huntington Beach

See ad next page

BPELSG Announcements

Visit <http://www.geology.ca.gov/> for news, meeting announcements, notices, and exam information. The following recent notices have been posted:

- **POSTED JANUARY 12, 2012** - California Specific Examination for Professional Geologist will be administered as a computer based test (CBT) beginning March 14, 2012. All candidates will receive a letter from the CBT vendor with instructions on when and how to schedule their examination.
- **RELEASE OF SEPTEMBER/OCTOBER 2011 EXAMINATION RESULTS** - Click on the link http://www.geology.ca.gov/applicants/release_of_september_2011_exam_results.pdf for information regarding the release of the September/October 2011 results.
- **TECHNICAL ADVISORY COMMITTEE MEMBERS WANTED** - Click the link <http://www.geology.ca.gov/licensees/tacwanted.shtml> for information regarding becoming a Technical Advisory Committee member.
- **EXPERT CONSULTANTS WANTED - ENFORCEMENT** - Click the link <http://www.geology.ca.gov/licensees/tewanted.shtml> for information regarding becoming an Expert Consultant for the Geologist and Geophysicist Program enforcement unit. Experts are needed to help review enforcement complaint investigations.
- **EXPERT CONSULTANTS NEEDED TO ASSIST WITH EXAMINATION DEVELOPMENT** - The Board is recruiting Professional Geologists, Professional Geophysicists, Certified Engineering Geologists, and Certified Hydrogeologists to assist with the development of licensing examinations. Please click the link <http://www.geology.ca.gov/licensees/smeswanted.shtml> for additional information. The Board appreciates your interest in the professions and your willingness to assist in the licensure process.

REG REVIEW, Inc.—ASBOG Study Course

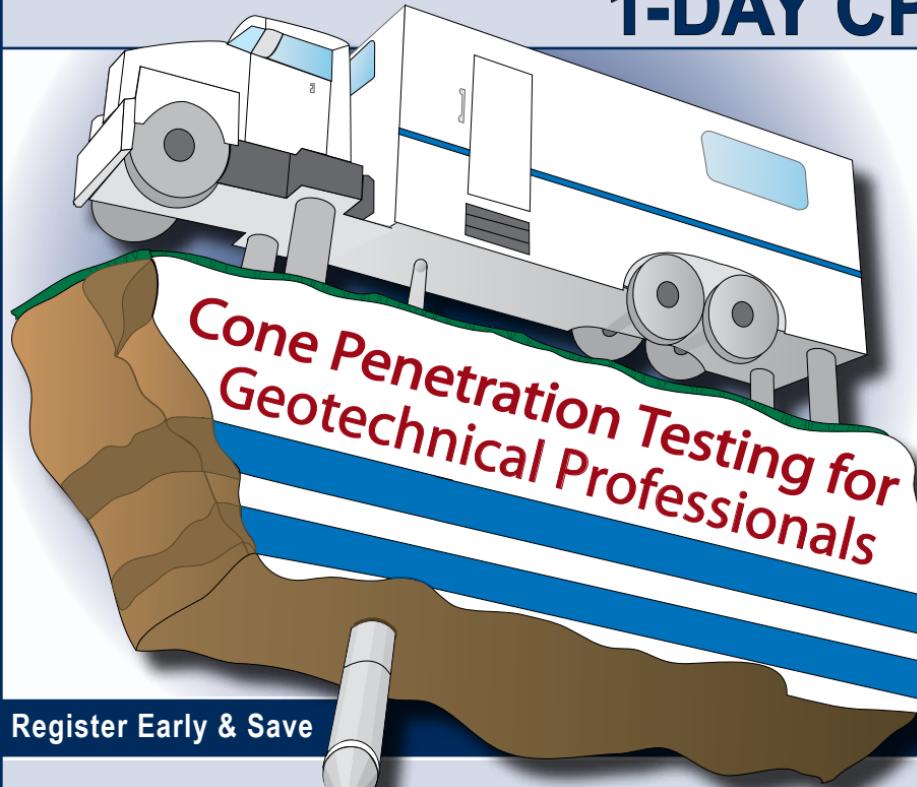
Are you taking the CEG or CHG exam in Fall 2012? REG REVIEW, Inc. will be offering a study course for the CEG and CHG exams on Saturday, June 19, 2012. The courses will be offered at the Best Western Orange County Airport North in Santa Ana, CA. For more info., visit www.regreview.com/

Judges Needed at the Regions Science & Engineering Fairs (info provided by Steve Mains of IGS, he can be contacted at watermains@aol.com if you need more details.)

The Twenty-sixth Annual Jurupa Unified School District Science and Engineering Fair will be held on February 15-17, 2012 at Jurupa Valley High School -Judges are needed on Feb 16. The RIMS Inland Science and Engineering Fair is held in San Bernardino – Judges needed on April 3.

See more detail in letters attached to this newsletter.

1-DAY CPT SHORT COURSE



*Cone Penetration Testing for
Geotechnical Professionals*

Register Early & Save

Earn Professional Development Hours (PDH's)

• **ON-LINE REGISTRATION AVAILABLE •**

Go to www.greggdrilling.com/seminars.html to enroll on-line today.

Course Tuition: \$195.00 early registration - \$270.00 late registration

SOUTHERN CALIFORNIA:

Friday - APRIL 6, 2012
HYATT REGENCY RESORT
Huntington Beach

COURSE INSTRUCTOR:

Dr. Peter Robertson

Presented by:
GREGG

Phone: (562) 427-6899



GEO-
INSTITUTE
San Diego Chapter



1-DAY SHORT COURSE
“ANALYSIS, DESIGN AND TESTING OF PILE FOUNDATIONS”

Instructor: Professor Bengt Fellenius
Date: Friday, March 30, 2012
Program: 8:00 am – 5:00 pm
Venue: Grand Pacific Palisades Resort & Hotel
5805 Armada Dr., Carlsbad, CA 92008
(<http://www.grandpacificpalisades.com/>)
Registration: Available online at
<https://www.eeri.org/registration/register.php>
Fee includes lunch, morning and afternoon refreshments, and
notebook of lecture notes.
**Members of EERI, ASCE Geotech (Geo-Institute San Diego), and
Deep Foundations Institute:** \$225
Non-Members: \$300
Students: \$125
PDHs: 7 Professional Development Hours available.

CONTENT: Case histories will be incorporated into all topics

1) Settlement analysis and accelerating settlement with wick drains

Principles of effective stress, stress distribution, compressibility, and settlement. Principles of radial consolidation and applications of wick drains to improve settlement conditions and mitigate lateral flow.

2) Analysis of load transfer and capacity of piles

Bearing capacity and load-transfer by effective stress and total stress methods; set-up and relaxation; capacity from CPT and CPTU and other in-situ methods.

3) The static loading test

Methods of testing, determining capacity, analysis of strain-gage instrumentation, residual load, separating shaft and toe resistances, determining load distribution, the O-cell test.

4) Design of pile foundations

Factor of safety, and rules of LRFD and Limit States Design, negative skin friction, drag load, and downdrag, settlement of single piles and pile groups due to load directly on the piles and due to influence from adjacent activity (downdrag); brief reference to Canadian, U.S., and European Codes.

Instructor: Dr. Bengt H. Fellenius, formerly professor of civil engineering at the University of Ottawa, is an internationally recognized foundation engineering consultant and the author of more than 300 technical papers. His professional experience comes from a wide variety of assignments that encompass foundation design for industrial plants, water and sewage treatment facilities, bridges and highway projects, marine structures, and urban area development, as well as participation in special investigations, instrumented field tests, etc. Dr. Fellenius has given lectures and courses to several universities and international conferences throughout America, Europe, and Southeast Asia. He currently lives in Sidney, BC, Canada.



STATE MINING AND GEOLOGY BOARD

DEPARTMENT OF CONSERVATION

801 K Street • Suite 2015 • Sacramento, California 95814

PHONE: 916 / 322-1082 • FAX: 916 / 445-0738 • TDD: 916 / 324-2555 • INTERNET: conservation.ca.gov/smgb

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BRIAN BACA, VICE CHAIR

JOHN LANE
KATHY LUND

ROBERT TEPEL
CHARLIE WYATT

January 12, 2012

Governor Edmund G. Brown, Jr.
State Capitol Building
Sacramento CA 95814

Re: State Mining and Geology Board

Dear Governor Brown:

The State Mining and Geology Board (Board) should continue its work for the people of California. We recognize and support your efforts to streamline government and reduce expenditures. The elimination of the SMGB currently under consideration, however, will have the opposite effects. As the current members of this important Board, we urge you to take into account the following factors.

The Board currently implements the Seismic Hazards Mapping Act, Alquist-Priolo Earthquake Fault Zone Mapping Act, and Surface Mining and Reclamation Act (SMARA), and has served a vital role for the past 125 years in setting State policy regarding mineral resource planning, mine reclamation and geologic hazards. It has been the Board that has set the policies and guidelines, and high standards, set forth and implemented by the California Geological Survey in its efforts to protect Californians from such hazards as earthquakes, landslides, debris flows and other natural hazards.

The Board's role in SMARA implementation is of particular importance. The Board adopts clarifying regulations to streamline the implementation of SMARA Statutes, and serves as an appeals body that provides independent oversight of local lead agency (City and County) and Department of Conservation (DOC) decisions. The Board also serves as the SMARA Lead Agency for three counties, the Bay Conservation and Development Commission, and a dozen cities.

A key function of the Board is to provide the public forum in which issues involving mineral resource planning can be raised and addressed. The shortage of permitted aggregate reserves in California has been a focus of Board discussion. As an example of the Board's efforts to conserve mineral resources, the SMGB Information Report on idle mines was

Letter to Governor Brown
January 12, 2012
Page 2 of 2

prepared and distributed to the legislature and other stakeholders. This report was extensively cited in the successful efforts to pass SB 108 this past legislative session. This bill allows many currently idle mines to remain in the State's inventory of mineral reserves.

The Board is comprised of nine members appointed by the Governor who represent various stakeholder groups and areas of expertise. The Board includes local government officials, expert geologists, environmental professionals, industry representatives and the general public. These members are volunteers who meet once per month and receive an honorarium of \$100 for each meeting. The Board operates with a staff of two persons (Executive Officer and Administrative Assistant). It is funded entirely by fees assessed on mining facilities and receives no general fund contribution. The Board actually reduces State costs by resolving many issues in an administrative hearing rather than in court. Although the Board is involved in litigation, this involvement is largely the result of the Board upholding on appeal decisions made by the Director of the Department of Conservation.

In summary, the functions and service provided by the Board cannot be duplicated by the staff of an administrative department. The elimination of the Board would transfer ultimate decision-making from an expert panel to a single individual. The opportunity of the public to be heard and administrative due process for affected entities would be lost. Furthermore, the elimination of the Board would cost money rather than save money.

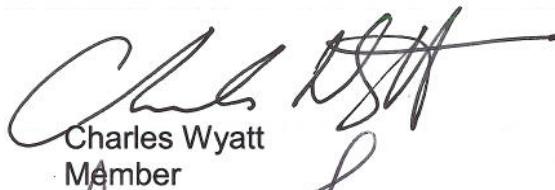
For the reasons outlined above, we urge you to support the continued existence of the State Mining and Geology Board.

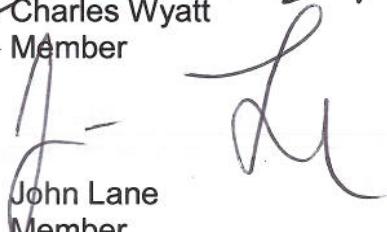
Sincerely,


Erin Garner
Chair


Brian R. Baca
Vice Chair


Robert Tepel
Member


Charles Wyatt
Member


John Lane
Member



JURUPA UNIFIED SCHOOL DISTRICT

26th Annual

Science & Engineering Fair



January 26, 2012

Steve Mains
Water Master Support Services
6447 Jaguar Drive
Riverside CA 92506

Dear Mr. Mains,

The **Twenty-sixth Annual Jurupa Unified School District Science and Engineering Fair** will be held on **February 15-17, 2012** at Jurupa Valley High School, 10551 Bellegrave Avenue, Jurupa Valley. This event is conducted to recognize student achievement in science at each of the district's schools and to identify those outstanding projects that will represent Jurupa Unified School District at the Inland Science and Engineering Fair.

The judging process is a very important part of the event and will take place on **Thursday, February 16**. I would like to invite you to serve as a judge for this year's District Science Fair. If you know someone who may be interested in serving as a judge, please invite them to join you and include their name when you RSVP (or, share this letter with them and they may RSVP). If you will be coming with another judge, please let us know so that you can be teamed together, which will allow you to finish at the same time.

At 8:00 a.m. on February 16, there will be an orientation meeting for the judges of the **middle and senior projects**. During this meeting the judging forms will be explained, the judging assignments made, and questions you may have will be answered. Then, judging of the middle and senior projects will be at 8:30 a.m. and proceed until approximately 11:30 a.m. The student exhibitors will be present for interviews to help you assess their achievement more accurately.

If you are unavailable on the morning of **February 16**, perhaps you would be able to judge **elementary** projects in the afternoon. Since the elementary students are not present for interviews, these projects may be judged **anytime before 5:00 p.m.** I hope that you will be able to fit this event into your busy schedule.

Please contact Sherri Stewart, at (951) 360-4184 or by e-mail at sstewart@jusd.k12.ca.us to confirm your participation.

Thank you for your commitment to education and to our youth.

Sincerely,
Vince Rosse
JUSD Science Fair Coordinator

/ss



RIMS is one of eleven regions of the California County Superintendents Educational Services Association

RIMS Superintendents

❖ Riverside

Kenneth M. Young
Riverside County
Superintendent of Schools
3939 13th Street
P.O. Box 868
Riverside, CA 92502

❖ Inyo

Terence K. McAtee, Ed.D.
Inyo County
Superintendent of Schools
P.O. Drawer G
Independence, CA 93526

❖ Mono

Stacey Adler, Ph.D.
Mono County
Superintendent of Schools
P.O. Box 477
Bridgeport, CA 93517

❖ San Bernardino

Gary S. Thomas, Ed.D.
San Bernardino County
Superintendent of Schools
601 North E Street
San Bernardino, CA 92410

January, 2012

Dear Science Fair Judge:

Thank you for the support that you have given to the RIMS Inland Science and Engineering Fair. This program, which encourages student research, would not be possible without the hundreds of expert volunteers who give their time to this event.

We hope that you will volunteer to be one of our judges this year. We know that recruiting more judges with your expertise directly improves the judging process and results.

This year's judging will take place April 3, 2012, at the National Orange Show's Damus Building in San Bernardino. If you are willing to help the students in our area by judging projects, please complete the enclosed Judge Form and **return it by mail or fax no later than March 23, 2012.**

We will send confirmation information to those who return the form. If you know of others who would be appropriate judges for the Science Fair, please feel free to share the registration form.

Thank you again for your support of science education. If you need additional information, please feel free to contact me at the number below or via e-mail, trivas@rcoe.us.

Sincerely,

A handwritten signature in black ink that appears to read "Tracey L. Rivas".

Tracey L. Rivas, Events Facilitator
Superintendent's Office
(951) 826-6570; FAX [951] 826-6951
trivas@rcoe.us

Enclosure



Inland Science and Engineering Fair Judge/Volunteer Information Sheet

April 3, 2012

(Please Print)

Riverside

Inyo

Mono

San Bernardino

Name _____

Mailing Address _____

City, Zip Code _____

District/Site _____

E-mail Address _____

I have been a judge _____ times.

I will judge during the following events on **Tuesday, April 3, 2012**: *(We encourage you to judge both divisions if possible.)*

8:30 a.m. – 1:30 p.m., Junior and/or Senior Division (Junior Division is grades 6-8; Senior Division is grades 9-12)

8:30 a.m. – 1:30 p.m., Elementary Division (Grades 4 and 5)

I am most qualified to judge in the following categories: *(check as many boxes as appropriate)*

Elementary: (Elementary division judging time: 8:30 a.m. – 1:30 p.m.)

1. Behavior Sciences 2. Biology Animals 3. Biology/Other Kingdoms 4. Chemistry

5. Consumer Science 6. Earth Sciences 7. Environmental Education 8. Math

9. Physics

Junior/Senior: (Junior division judging time and Senior division judging time: 8:30 a.m. – 1:30 p.m.)

1. Aerodynamics/
Hydrodynamics
(Jr. Division Only) 2. Alternative Energy (Junior
Division Only) 3. Applied Mechanics &
Structures 4. Behavioral & Social
Sciences

5. Biochemistry /
Molecular Biology 6. Chemistry 7. Cognitive Science
(Junior Division Only) 8. Earth & Planetary
Sciences

9. Electronics &
Electromagnetics 10. Environmental Engineering
(Junior Division Only) 11. Environmental
Science 12. Mammalian Biology

13. Materials Science
(Junior Division Only) 14. Mathematics & Software 15. Microbiology
(General) 16. Microbiology
(Medical) **(Junior Division
Only)**

17. Pharmacology /
Toxicology 18. Physics & Astronomy 19. Plant Biology 20. Product Science
(Biological) **(Junior
Division Only)**

21. Product Science
(Physical)
(Junior Division Only) 22. Zoology

Please mail or fax this form to:

Tracey Rivas, Events Facilitator
Riverside County Office of Education
P.O. Box 868; Riverside, CA 92502-0868
E-mail: trivas@rcoe.us
(951) 826-6570; FAX (951) 826-6951

Map to the Temecula Public Library (from I-15 and Rancho California Road)

DIRECTIONS

From I-15, EXIT at Rancho California Rd. and proceed 0.2 miles northeast to the first light at Ynez Rd and take a right (south). Proceed 0.8 miles southeast on Ynez to the third light at Pauba Road. Take a left on Pauba Rd. and proceed 0.9 miles northeast. The Temecula Public Library is the large building on the north side (left) of the road.

