

SAN DIEGO ASSOCIATION OF GEOLOGISTS

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SDAG MEETING ANNOUNCEMENT

WEDNESDAY, AUGUST 21, 2013

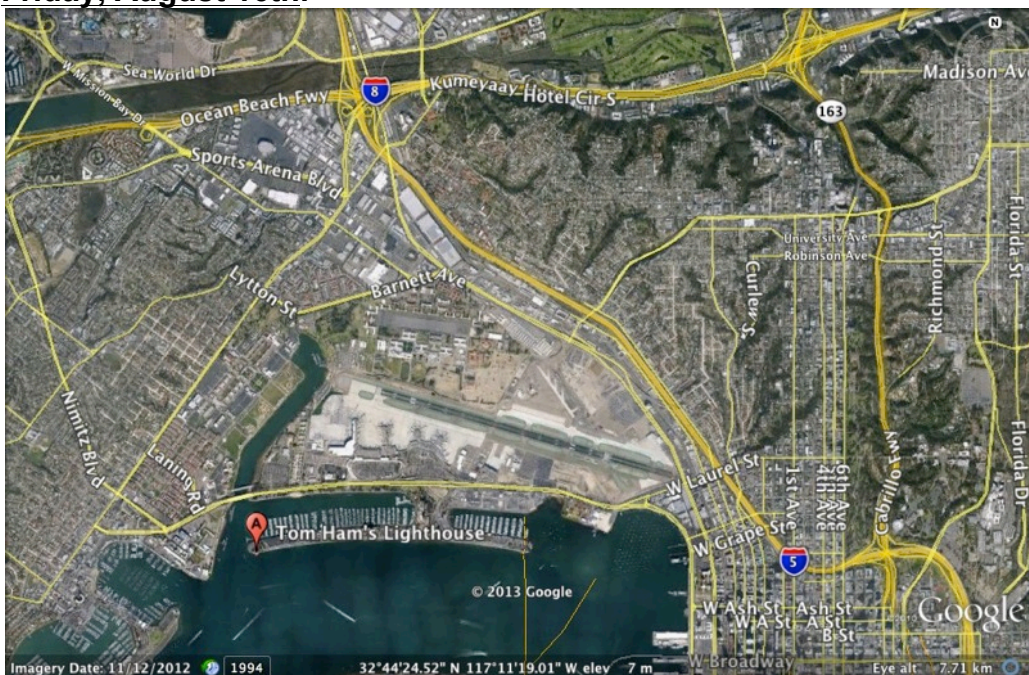
AN UPDATE ON THE ROSE CANYON FAULT

Presented by

Dr. Thomas Rockwell
San Diego State University

- Where:** Tom Ham's Lighthouse
2150 Harbor Island Drive, San Diego
(619) 291-9110
- When:** 5:30 pm – Social Hour
6:30 pm – Dinner
7:30 pm – Program
- Dinner:** Buffet
- Cost:** \$35 per person, \$5 discount for members, STUDENTS: \$15. Add \$5 if you did not make a reservation.

Reservations: Make your reservation online at www.sandiegogeologists.org no later than noon on **Friday, August 16th**.



**RESERVATIONS CANNOT BE GUARANTEED AFTER FRIDAY AT 12 NOON,
BUT THEY ARE ALWAYS PREFERRED OVER WALK-INS**

SPEAKER ABSTRACT

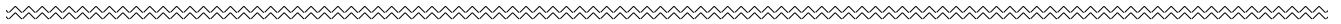
**Dr. Thomas Rockwell
San Diego State University**

An Update on the Rose Canyon Fault

The Rose Canyon fault zone in San Diego, California, has many well-expressed geomorphic characteristics of an active strike-slip fault, including scarps, offset and deflected drainages and channel walls, pressure ridges, a closed depression, and vegetation lineaments. Geomorphic expression of the fault zone from Mount Soledad south to Mission Bay indicates that the Mount Soledad strand is the most active. A network of trenches excavated across the Mount Soledad strand in Rose Creek demonstrate a minimum of 8.7 m of dextral slip in a distinctive early to middle Holocene gravel-filled channel that crosses the fault zone. The gravel-filled channel was preserved within and east of the fault but was removed west of the fault zone by erosion or possibly grading during development. Consequently, the actual displacement of the channel could be greater than 8.7 m. Radiocarbon dates on detrital charcoal recovered from the sediments beneath the channel yield a maximum calibrated age of about 8.1 ± 0.2 kyr. The minimum amount of slip along with the maximum age yield a minimum slip rate of 1.07 ± 0.03 mm/yr on this strand of the Rose Canyon fault zone for much of Holocene time. Other strands of the Rose Canyon fault zone, which are east and west of our site, may also have Holocene activity. Based on an analysis of the geomorphology of fault traces within the Rose Canyon fault zone, along with the results of our trenching study, we estimate the maximum likely slip rate at about 2 mm/yr and a best estimate of about 1.5 mm/yr. Stratigraphic evidence of at least three events is present during the past 8.1 kyr. The most recent surface rupture displaces the modern A horizon (topsoil), suggesting that this event probably occurred within the past 500 years. Stratigraphic and structural relationships also indicate the occurrence of a scarp-forming event at about 8.1 kyr, prior to deposition of the gravel-filled channel that was used as a piercing line. A third event is indicated by the presence of several fault strands that displace the channel but did not move during the most recent event. Other events may also have occurred, but these data suggest that the return time for surface-rupturing earthquakes is no more than about 4 kyr.

SPEAKER BIO

Dr. Thomas Rockwell is a nationally and internationally renowned paleoseismologist and geomorphologist. Having served as Geology Group Leader for the Southern California Earthquake Center for many years, he is an expert on the tectonics and earthquake hazards of southern California and Baja California, has conducted extensive trenching programs to date earthquakes on faults in the western U.S., South and Central America, the Middle East and Asia, and routinely uses soil stratigraphy and geomorphology combined with various radiometric dating techniques to assess rates of fault activity, determine recency of faulting, and date past earthquakes. His research focuses on understanding earthquake occurrence in time and space. Current projects include the characterization of fault systems behavior by understanding patterns of past recurrence of large earthquakes on faults in southern California, northern Mexico, Panama, Argentina, Portugal, Turkey, India, and Israel. This work includes resolving information on slip per event, as it relates to understanding the controls on segmentation and rupture termination. He has also worked extensively on the affects of tectonism on the landscape, and using geomorphology to constrain rates and timing of tectonic events. Included in this latter aspect is detailed mapping and dating of marine terraces along the west coast of North America and assessment of paleosea level during the late Quaternary.



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.

September 25, 2013	SONGS Update - Joint Meeting with EERI
October 16, 2013	Len Sinfield - A Year in Kandahar
November 20, 2013	Nick Clapp - Mojave Mining History
December 18, 2013	Dr. Tom Deméré, San Diego Natural History Museum



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This is the first of hopefully many short articles of geologic interest to the San Diego geologic community. Our goal is to publish one article in each of the monthly newsletters. The only requirements are that the subject be relevant to southern California geologists and that the articles be no more than three pages in length including photographs and maps. The topic should be of interest to SDAG members and be about a project that you have either recently worked on or one that involves your original research. So think about some of the interesting projects you have worked on; sit down and write one!

The Muirlands Fault Revisited

Michael W. Hart, Engineering Geologist

mwhart@aol.com

The Muirlands fault, as depicted on the geologic map of the La Jolla quadrangle (Kennedy,1975) extends from Forward Street in the Bird Rock area northwesterly to the vicinity of Pearl Street; a distance of less than two miles. For half of that distance the fault is mapped as concealed by either the Late Pleistocene Bay Point Formation or the Plio-Pleistocene Lindavista Formation. Where exposed in bedrock on the western slopes of Mount Soledad, the fault is depicted as juxtaposing Eocene rocks of either the Ardath Shale or Mount Soledad Formation with the Cretaceous Cabrillo Formation. Although the fault is shown on the La Jolla quadrangle as buried by Pleistocene sediments, the City of San Diego has included the full length of the fault, including those portions shown concealed or buried beneath Pleistocene units, in Geologic Hazard Category 12, a zone that denotes "Potentially Active" faults (defined on the City Seismic Safety Study's Geologic Hazards and Faults maps as a fault that is inactive, presumed inactive, or activity unknown). As a practical matter this designation has meant that Category 12 faults include all mapped faults in the City, except for "Active" faults that have been included in state of California delineated Alquist-Priolo Earthquake fault zones (A-P Zones).

The Muirlands fault is shown as concealed beneath early Pleistocene units so it does not fit the A-P Act's definition of a "Potentially Active" fault. There is, of course, uncertainty in the relationship of the fault to the Pleistocene deposits because the original mapping was not aided by a subsurface investigation that would have provided more definitive age relationships. This fact likely influenced the City's decision to include even those portions of faults shown as buried or concealed by the Bay Point and Lindavista Formations in Geologic Hazard Category 12. This situation has concerned the author (and others) for some time since it is believed that trenching for a fault whose nearest bedrock exposure lies thousands of feet from the site to be studied was bound to be fruitless and frustrating as well as a waste of money. It is the intent of this brief study to examine one of these poorly documented faults, the Muirlands fault, and to show that there is no geologic evidence for the existence of this fault for over half of its mapped trace. This will be accomplished by showing that the "fault" at its northernmost exposure is actually a steeply dipping depositional contact.

This conclusion is possible as the result of reexamining a critical exposure of the "fault" that was utilized as evidence for the original mapping nearly 50 years ago. This exposure has now been improved by a half century of erosion and a degree of manual labor. The outcrop is located approximately 150 ft. south of the eastern terminus of Bonaire Street in La Jolla near the top of a 10 ft. high cut slope on the east side of a paved hiking trail. At this location the "fault" is shown juxtaposing Ardath Shale and the conglomerate member of the Cabrillo Formation.

It is noted that there have been several trenching studies performed in the last 15 or so years along the trace of the fault where it is mapped on the Nestor Terrace in La Jolla. One of these studies by Evans (1998) was for a site on Sea Lane. Evans indicated that he encountered a minor fault in the Bay Point Formation and concluded that it might be related to the Muirlands fault but displayed a vertical offset of only 4 inches and had a N53W strike compared to the average N30W strike of the Muirlands fault. For these reasons Evans did not consider the fault to be the Muirlands fault. Further subsurface investigation of this minor fault was performed by Hart (2003) for a site located approximately 100 feet north of the property trenched by Evans on Sea Lane. The trenches for Hart's study were on strike with the fault reported by Evans, however, faulting was not found and it was concluded the fault likely died out in the Bay Point Formation.

Today, the best and most accessible outcrop of the Muirlands fault, as originally mapped, is located in the previously described 10 ft. high road cut near the east end of Bonaire Street (Figures 1-3). At this locality the Muirlands fault is mapped as juxtaposing Ardath Shale with the conglomerate member of the Cabrillo Formation. Reevaluation of this exposure indicates that the Ardath Shale lies disconformably on the Cabrillo Formation with no evidence of faulting. At this location the contact dips approximately 30 to 34 degrees northeast with a strike of N42 to 60W (Figure 2). If faulting is not present here then there is no geologic evidence of any faulting for over half of the fault's mapped trace since the next fault outcrop shown on the geologic map of the La Jolla Quadrangle is over 1,500 feet south of Bonaire Street where the fault is shown juxtaposing the Mount Soledad and Cabrillo Formations. South of that exposure, which is no longer readily accessible, there are only two other locations where the fault is mapped with a solid line. A third fault exposure south of the Muirlands fault proper, has a more northwesterly strike and is not connected to the Muirlands fault. It is concluded that while the Muirlands fault may exist in the Eocene and Cretaceous bedrock south of Muirlands Vista Way (see Figure 1) there is no evidence that the fault exists as mapped across the extensive marine terrace north of Bonaire Street.

References

- Evans, J.R., 1998, Fault investigation and geologic reconnaissance, 536 Sea Lane, La Jolla, California, pp. 1-3.
- Hart, M.W., 2003, Marine Street Condominiums, La Jolla, California, a proprietary report for a property at 525 Marine St., La Jolla, CA.
- Kennedy, M.P., 1975, Geology of the San Diego Metropolitan Area, California; Calif. Div. Mines and Geology, Bull. 200.

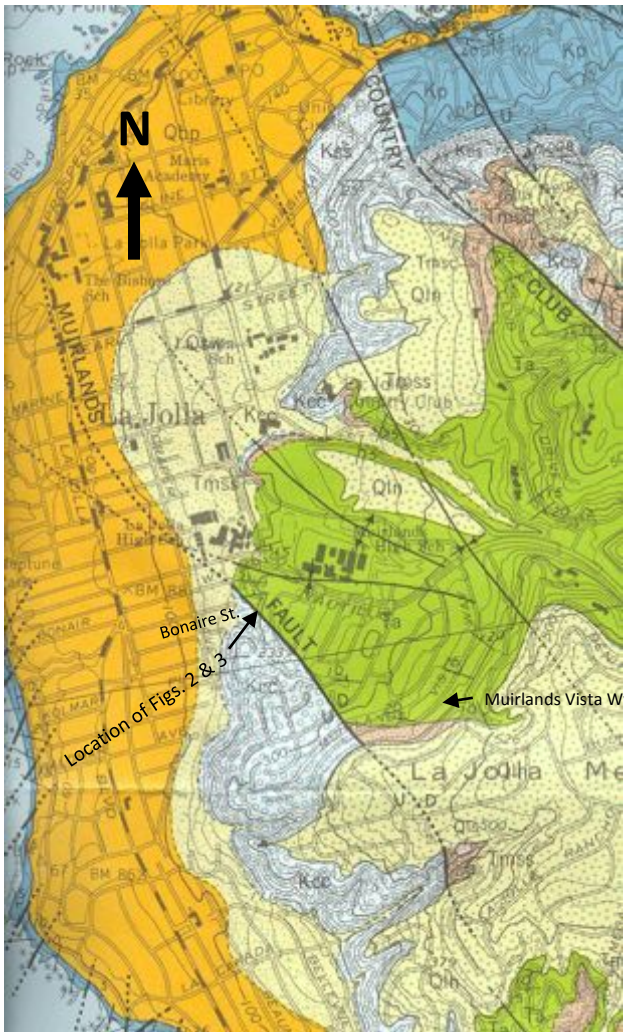


Figure 1. Geologic Map of La Jolla area

- Qbp: Bay Point Formation
- Qln: Lindavista Formation
- Ta: Ardath Shale
- Tmss: Mount Soledad Formation (sandstone)
- Kcc: Cabrillo Formation (conglomerate)

From Kennedy, 1975



Figure 2. Ardath Shale overlying Cabrillo Fm. Conglomerate, attitude of contact is N42-60W, 30-34 NE. Location of Figure 3 is out of view to right.

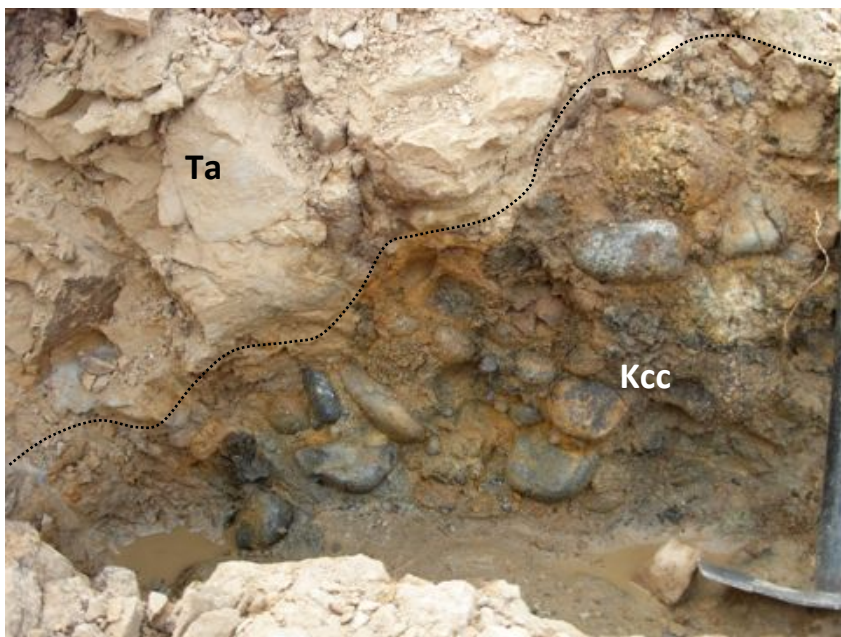


Figure 3. Disconformable contact between Ardath Shale and Cabrillo Fm.

GEOLOGY PHOTO OF THE MONTH



Sandstone at Torrey Pines State Reserve

ANNOUNCEMENTS

AMERICAN CETACEAN SOCIETY, SAN DIEGO CHAPTER will host a talk by Dr. Thomas Deméré entitled "Evolutionary History of Baleen Whales: Big Mouths and Baleen." The event will be held on Wednesday, August 14th, at the Sumner Auditorium at Scripps Institution of Oceanography. Please visit the ACS-SD website for more information: <http://www.acssandiego.org/>

RESERVE YOUR SPOT FOR THE 2013 SDAG FIELD TRIP! The 2013 SDAG field trip will take place November 8 – 10. The trip will explore the geology and natural resources of the San Luis Rey River Valley and will end with a visit to the Oceanview Mine! To guarantee your spot, please register no later than Monday, August 19th, 2013. For more information and to download a reservation form please visit the SDAG field trip website

<http://www.sandiegogeologists.org/Trip2013.html>

CALL FOR ARTICLES! SDAG invites members to submit articles on their current research or an interesting project they are working on for publication in the monthly newsletter. The article should be no more than 1 page in length. Photos are welcomed, too. Please submit articles to the SDAG secretary via email.

CALL FOR PHOTOS! SDAG invites members to submit photographs of an interesting geologic feature for publication in the Geology Photo of the Month section of the newsletter. Please submit your photo along with a caption to the SDAG secretary via email.

VINTAGE SDAG GUIDEBOOKS NOW AVAILABLE FOR FREE DOWNLOAD! If you want to complete your collection, or just see what SDAG was up to in the 1970s, check out our website's publication page, and scroll all the way down: <http://www.sandiegogeologists.org/Publications.html> In addition to our very first publication in 1972, a field trip to Otay Mesa, you'll find our 1973 *Geology and Hazards of San Diego* volume, the first of two guidebooks to the Coronado Islands, in 1978, and our 1987 field guide to the gold mines of Julian. Happy reading!

SDAG RESEARCH TOOL A comprehensive listing of all papers published by SDAG, whether as annual field trip guidebooks or special publications, is available on our website. Entries are sorted by primary author, or chronologically by date of publication, from our first guidebook in 1972 to all things Picacho in 2011. These can be accessed or downloaded as .pdf files. They are fully searchable in Adobe Reader or Acrobat, so if you are researching a topic, "tsunami" for example, you can search for that keyword. This listing will be updated as new books are published. Thanks to Greg Peterson and Hargis + Associates, Inc., for making this possible. See the links below:

http://www.sandiegogeologists.org/SDAG_Pubs_authors.pdf

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AESE ANNUAL MEETING REGISTRATION IS OPEN Meeting registration and hotel reservations are open for the 47th annual meeting of the Association of Earth Science Editors (AESE), “Native Resources: Building on the Bedrock of Geoscience Editing,” to be held **October 10–13, 2013**, in Tulsa, Oklahoma. AESE will meet in the top-rated Courtyard by Marriott Tulsa Downtown, 415 South Boston Avenue, the recently renovated historic Atlas Life Insurance building in the Art Deco district of “America’s Most Beautiful City.” Tulsa was the “Oil Capital of the World” for several decades and a center of development for petroleum geoscience.

The meeting will include an opening reception, technical talks, field trips, freelancers’ breakfast, survey editors’ breakfast, business luncheon, awards dinner with entertainment, and optional free-time activities. The board will meet at 1 p.m. October 10 and 9 a.m. October 14.

Meeting registration fees will increase after September 1. Hotel reservations are due by September 26. Be sure to ask for the AESE room rate of \$89 per night.

The field trips will focus on “Exploring our Black Gold Legacy: The Geology, Art, and Architecture of Oklahoma Oil Men.”

AESE members are involved in editing and publication of material pertaining to the earth sciences. AESE provides a forum for the interchange of ideas for more effective dissemination of earth-science information to the scientific community, educators and students, and the public.

For details about the meeting, see the registration form. For more information, contact Rowena Mills, host chair, hrmills777@yahoo.com, visit www.aese.org.

AESE REGISTRATION FORM
Association of Earth Science Editors 47th Annual Meeting
Tulsa, Oklahoma, October 10–13, 2013

Full name _____
 First name for badge _____
 Affiliation for badge _____
 Address _____
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 E-mail (for registration confirmation) _____

REGISTRATION

Full registration fees cover admission to all sessions, opening reception, business lunch, awards banquet, and field trips.

AESE members

Full meeting	On or before September 1	\$295	After September 1	\$345	\$ _____
One day	On or before September 1	\$125	After September 1	\$150	\$ _____

Nonmembers

Full meeting	On or before September 1	\$345	After September 1	\$395	\$ _____
One day	On or before September 1	\$150	After September 1	\$175	\$ _____

Nonmember registration includes membership for the remainder of AESE's fiscal year.

Guest registration (includes opening reception, awards banquet, one half-day field trip, one full-day field trip)

\$150 (U.S.) each for _____ person(s) \$ _____

If guest wishes to attend the business luncheon on Friday, October 11, please add \$25 \$ _____

Guest name(s) _____

Optional events

State, provincial, and national surveys editors' breakfast (Friday, October 11)	\$20	\$ _____
Freelancers' breakfast (Saturday, October 12)	\$20	\$ _____

TOTAL FEES ENCLOSED \$ _____

Board: First board meeting 1 p.m. October 10; second board meeting 9 a.m. October 14. Plan your travel accordingly.

I plan to attend:

- | | |
|---|---|
| <input type="checkbox"/> Opening reception (Thursday evening) | <input type="checkbox"/> AESE business luncheon (Friday) |
| <input type="checkbox"/> Awards banquet (Saturday evening) | <input type="checkbox"/> Half-day field trip (Saturday afternoon) |
| <input type="checkbox"/> Survey editors' breakfast (Friday) | <input type="checkbox"/> Full-day field trip (Sunday) |
| <input type="checkbox"/> Freelancers' breakfast (Saturday) | |

Dietary and/or transportation restrictions _____ (Add extra page if needed.)

For further information about the meeting, e-mail
 Rowena Mills, host chairman
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Pay by credit card or PayPal at
<http://www.aese.org/paypal.html>

*All checks must be electronically transferable to a U.S. bank that is imprinted on the check and includes the nine-digit routing number between "smiley faces." Checks without the nine-digit routing number will be returned.

Mail registration form and check* or money order payable to AESE in U.S. funds to

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 Call the Courtyard by Marriott Downtown, 415 S. Boston Ave., Tulsa, at 918-508-7400 or 877-894-2809. **Ask for the AESE rate of \$89 per night by Sept. 26.**

SEEKING JOB OPPORTUNITIES

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- California PG, MS Geology, over 13 years of applied geotechnical experience, proficient in geotechnical investigations, hazard evaluations, geophysical surveys, construction management and quality control, engineering analyses, special interest in earthquake-hazard and seismic design related applications, strong problem-solving and organizational skills. Detailed resume upon request: Anna, 201-407-7461, Afyodorova103@gmail.com

ENTRY-LEVEL ENVIRONMENTAL SCIENTIST - I am a recent UCSB graduate with a double major in Environmental Studies (BS) and Geology (BS, Earth Systems emphasis) who is looking to begin a career in environmental consulting. I have prior lab experience in both professional and academic settings. I am looking to establish myself with a passionate and hard working environmental firm in the San Diego region. For further information about my credentials and work experience please contact Georgi Chertkov at georgichertkov@gmail.com or call me at 505-412-3107.

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