

# SAN DIEGO ASSOCIATION OF GEOLOGISTS

[www.sandiegogeologists.org](http://www.sandiegogeologists.org)

## SDAG MEETING ANNOUNCEMENT

WEDNESDAY, May 16, 2012

### A New Perspective on Arsenic Cycling Between Minerals and Groundwater

*Presented by*

Dr. Beth O'Shea

Assistant Professor

Department of Marine Science and Environmental Studies

University of San Diego

**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

**Dinner:** Mexicano fantastico. Beverage station. Cash bar.

**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](http://www.sandiegogeologists.org) no later than noon, **Monday, May 14<sup>th</sup>**.

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



## **SPEAKER ABSTRACT**

### A New Perspective on Arsenic Cycling Between Minerals and Groundwater

*Dr. Beth O'Shea, Assistant Professor, University of San Diego*

Arsenic occurs naturally in many global groundwater environments. Currently, much of the arsenic geochemical research focuses on predicting groundwater systems that contain arsenic greater than acceptable drinking water limits. Regional and global scale statistical models use a combination of mineralogy, geomorphology, and groundwater redox chemistry to identify aquifers where populations are potentially at risk of elevated arsenic exposure. However, these models can be improved by considering the geochemical interaction between groundwater and two common aquifer minerals; biotite and garnet, which have recently been discovered to contain appreciable concentrations of arsenic. The identification of these new arsenic source minerals suggests a previously overlooked release mechanism into groundwater, and could help explain the complicated geochemical patterns observed in the naturally elevated arsenic aquifers around the world. For the first time, data supporting these new arsenic mineral sources will be presented, and the implications for arsenic cycling in the environment will be discussed in the context of current and future research needs.

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## **SPEAKER BIO**

Beth received her undergraduate degree in Earth and Environmental Science at the University of New South Wales in Sydney, Australia. After a few years working as an environmental consultant she returned to the same institution to pursue a Ph.D. in aqueous geochemistry. Her thesis work used geomorphology to determine the source of arsenic in a coastal aquifer, which she later revisited as part of a postdoctoral position at Lamont-Doherty Earth Observatory. Beth taught environmental geochemistry-type courses for 5 years at Dickinson College in PA and Columbia University in New York before joining USD's Department of Marine Science and Environmental Studies as Assistant Professor in Fall 2010. When she's not being a geochemist you can find her rowing on Mission Bay, hiking Torrey Pines, or lazing on a beach downunder.



## 2012 SDAG MEETING SCHEDULE - Mark Your Calendars!

Meetings are usually on the 3<sup>rd</sup> Wednesday of the month but may change to accommodate speaker and meeting place schedules. Check here for updates!

June 13, 2012	<b>Joint Meeting with SCGS, Speaker TBA</b>
July 18, 2012	<b>TBA</b>
August 15, 2012	<b>TBA</b>



### 2012 EXECUTIVE COMMITTEE

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## PRESIDENT'S CORNER

When I became President, I didn't know I would be using the President's Corner as a platform to help save our strapped State Park system, but that seems to be the ongoing subject here. Last month I went with my family on vacation to Borrego Springs, and naturally visited the State park there. While strolling around town, I noticed one of the visitor's centers along Palm Canyon Drive displaying a map showing all the State parks that are scheduled to close. This map was published by a statewide organization dedicated to saving the parks, called Save Our State Parks, [www.savestateparks.org](http://www.savestateparks.org). This site will tell you everything you need to know on what to do to get involved and what's going on. Check out the map I was talking about - it's amazing how many are located along the northern coast and within the Bay area of the State - and only four total in Riverside, Imperial, and San Diego Counties that are scheduled for closure (and Palomar Mountain S.P. recently received enough private donations to hold off the ax, for now, anyway). The site also posts recent newspaper articles and opinion columns from across the State concerning park closures.

Speaking of Anza-Borrego Desert, don't hike the Palm Canyon trail in 100-degree heat with a four-year old - you won't get far. Actually, we had fun nevertheless, and incredibly saw not one, not two, but four desert bighorn sheep, and pretty close up: a ram, two ewes, and a lamb. What a sight! Not only that, but we rode out a M 3.5 earthquake, centered just west of the northern part of the Borrego Valley. One split-second jolt and it was over!

April's meeting at the Old Town Mining Company was a success, so we'll plan on meeting there again soon. This month, like an old friend, we're back to visiting Emiliano's, where we'll hear Dr. Bethany O'Shea present the latest word on arsenic in groundwater.

*Todd Wirths*  
*President*



## ANNOUNCEMENTS

### **\*\*\*One Stop Wonder!\*\*\***

Saturday, May 12, 2012, 10AM

SDAG One Stop Wonder: Fault Trench Exposing Clark Strand of San Jacinto Fault, Clark (dry) Lake, Anza-Borrego Desert State Park.

OSW contact: Monte Murbach

cell: 619 865 4949

Email: [mmurbach@aol.com](mailto:mmurbach@aol.com)

**Details:** This is a one-time (and last) opportunity to visit a trench cut across the Clark Strand of the San Jacinto fault - SDSU Student Mike Buga's Thesis site. Mike, along with Professor Dr. Tom Rockwell, found up to 10 earthquake events exposed in a fault trench (named T-3). We will get to observe (and discuss/argue!) the numerous offsets in the lake sediments. T-3 along with several other trenches were all hand dug with pick and shovel. T-3, the main trench, is the last remaining open trench. This is where we all come in. After spending time looking at the fault features we need to backfill the trench. So all those able-bodied geo-types are requested to help. If we have a lot of bodies we can backfill it in a short time. Mike cannot be there and he appreciates any help buttoning up his project.

#### **Logistics:**

1) **10AM** Meet at the entrance to Rockhouse Canyon Road, just off of S22, northeast of Borrego Springs. See attached location map. We will caravan together into Clark Lake which is for authorized vehicles only - that is why we must caravan. There is cell phone at the meeting location, however there is mostly zero cell at the trench site.

**2) IMPORTANT: If you plan on going please call or email the trip leader Monte Murbach - contact info at top.**

3) Bring: Sun hat, hard hat (if you get in the trench), plenty of water, snacks, camera, shovel, gloves, high clearance vehicle, etc.

4) Don't Bring: family pets. Not allowed in this area. Sorry.

5) The caravan will drive into the "Authorized Vehicles Only" together. Stay on the main tracked road. We will park along side of the tracked road in the lake bed (see map). Don't drive in this area by yourself - you will get a citation from a Ranger.

6). We will take a leisurely walk to the trench site. It is less than a half mile walk. Bring all you need to last a few hours (at the most).

7). The trip leader may adjust the meeting time based on expected temperatures. Hopefully it will still be in the high 80's or low 90's. If it looks like it is going to be hotter we may move the meeting time to 9am or earlier. If you drive out to Anza Borrego that morning give yourself plenty of time to get to Rockhouse Canyon Road. It takes Monte more than 2 hours to get there from Point Loma.

8) If it gets too hot we can take a break and go to lunch possibly at the nearby airport restaurant. Their lunch special is Air Conditioner. If the trench is not yet completely backfilled the brave ones can go back late in the afternoon to finish the job.

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## Memorial for Rich Borstadt

Rich Borstadt was of great help to SDAG field trips and one-stop wonders circa 2005-2007. Thanks to him several SDAG members had the opportunity to ride the SD&AE railroad through Carrizo Gorge. During the 2006 annual field trip he also enabled many to ride from Indian Hill into the gorge on putt-putt cars. His memorial service will be at the Campo Railroad Museum on Wednesday May 23<sup>rd</sup> at 1 pm. RSVP yes only by May 18<sup>th</sup> to:

Bryan Butler  
619-277-9427

[lizard.butler@gmail.com](mailto:lizard.butler@gmail.com)

If you have any photos of Rich please send them to Bryan with a written testimony no more than 2 paragraphs in length.

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**Tough Mudder** - Looking for a few hardy geologists (or engineers!) interested in competing as a team at this year's Tough Mudder event, at the Snow Valley Mountain ski resort near Big Bear on the weekend of July 7th/8th. If anyone's interested in 12 miles of pain and suffering followed by unlimited cold beer, then please e-mail Rupert Adams at [rupert.hgi@sbcglobal.net](mailto:rupert.hgi@sbcglobal.net). For more info, check out <http://www.toughmudder.com>

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**Google Earth and Geology** - For those of you who attended last November's field trip to Picacho, remember Gary Girty's impressive 7-foot long geology map? You can download it as a kml file here: <http://www.geology.sdsu.edu/kmlgeology/>.

Speaking of Google Earth, if you liked the article/road log "Barney Oldfield" in *Picacho and the Cargo Muchachos*, Todd Wirths would be happy to provide the kml file for the Cactus Derby Race route - it's fun to fly through the Cargo Muchacho Mountains!

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**Geology Books** - Todd Wirths found a great website for book lovers and geologists: 2Neat Books, <http://www.woodenski.com/>. They "specialize in out-of-print geology, mineralogy, hydrology, paleontology books, papers, bulletins, journals and more from around the world." Very impressive collection, worth checking out ("woodenski" is the website operator's name).

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## SPEAKERS WANTED!

Please contact your president, Todd Wirths, for suggestions and leads on potential speakers for our meetings.

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## SDAG Field Trip 2012

# Waiting for Tsumani: Coastal Hazards, North San Diego County

The 2012 San Diego Association of Geologists annual field trip will examine the coastal hazards and volcanic history of northern coastal San Diego County, California. We will tour San Onofre Nuclear Power Plant and Scripps Pier on Saturday. On Sunday, we will visit Calavera Hill and Agua Hedionda Lagoon.

**DATES / ITINERARY:** September 8-9, 2012.

Bring everything you need to get a good night's sleep, as well as a folding chair and evening drinking vessel. There are picnic benches in camp. Green-minded? Bring a mess kit, save trash! Please carpool to Guajome Park.

**Saturday** – Meet at Guajome Park campground at 7:30am, approximately 45 minute drive from San Diego for a continental breakfast. Saturday lunch and snacks provided as well as a BBQ supper feast. Transportation from the park to our stops will be provided. Option for overnight camping at Guajome Park, no additional cost.

**Sunday** – Continental breakfast, box lunch, and departure. Transportation by private vehicle.

**COST:** \$140 per person. Discount for SDAG members and students. Fee includes guidebook, campground fee, five meals, snacks, and beverages. Fees are non-refundable. All ages welcome.

**FOR ADDITIONAL INFO:** Contact SDAG VP Cari Gomes at [cq7783@yahoo.com](mailto:cq7783@yahoo.com).

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**2012 SDAG FIELD TRIP REGISTRATION FORM**

**TODAY'S DATE:** \_\_\_\_\_, 2012

Name(s): \_\_\_\_\_

Address: \_\_\_\_\_

City/State/Zip: \_\_\_\_\_

Phone(s): \_\_\_\_\_

Email: \_\_\_\_\_

**TOTAL NUMBER AND FEE FOR YOUR PARTY**

\_\_\_ \$140/ea. Non-members: \$ \_\_\_\_\_  
\_\_\_ \$120/ea. SDAG member\* discount: \$ \_\_\_\_\_  
    Member spouse cost w/o field trip guidebook  
\_\_\_ \$ 60/ea. Students (1<sup>st</sup> 10) \$ \_\_\_\_\_

**MAIL FORM AND CHECK (payable to SDAG)**

**TO:**  
SDAG  
663 S. Rancho Santa Fe #124  
San Marcos, CA 92078

**TOTAL ENCLOSED: \$** \_\_\_\_\_

## San Diego Geological Society, Inc. and San Diego Association of Geologists General Release and Save Harmless Waiver

The undersigned is advised that dangers and hazards may include but are not limited to uneven ground, steep trails, poison oak, heat and cold stress, poisonous reptiles and insects, open flames, uncertain and possible extreme weather conditions, mad dogs, floods, earthquakes, tsunamis, radiation exposure, sun burn, and landslides on the San Diego Association of Geologists field trip planned for September 8-9, 2012, and does hereby assume any and all risks involved in connection with the field trip and does hereby save and hold harmless San Diego Geological Society, Inc., its board of directors, its committees including the San Diego Association of Geologists and its officers and members, and other participants, all claims, losses and damages (including attorney's fees and any costs involved because of said claims) on account of injury, death, property damage, and inconvenience or loss of money due to delay that may arise, by reason of my participation in the field trip. I understand that I am responsible for carrying my own medical and liability insurance.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

## ***Ricardo Breceda: Accidental Artist*** **Receives Gold Medal for Cover Design**

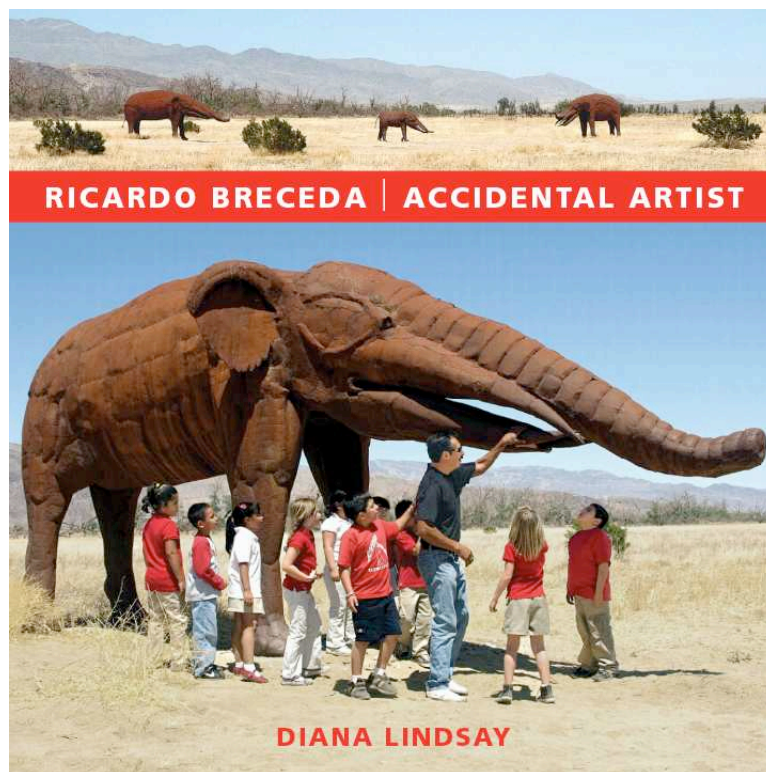
*Ricardo Breceda: Accidental Artist*, the recently published book about the artist who created the spectacular metal sculptures found in Borrego Valley, California, was selected the winner of a coveted gold medal for cover design for the 2012 PubWest Book Design Awards according to San Diego-based publisher, Sunbelt Publications.

The PubWest Design Awards were developed 28 years ago to recognize superior design and outstanding production quality of books. Entries are open to all publishers in North America, along with the designers, typographers, and printers supporting them. The award, a custom engraved medallion and certificate, will be presented to Sunbelt Publications at the PubWest 2012 Conference in October at the Keystone Resort and Conference Center in Keystone, Colorado.

The PubWest Conference is widely regarded as the most valuable publishing conference in North America for small to mid-sized publishers. According to Kent Watson, executive director of PubWest, the annual conference “allows all of us to see trends that are coming into the publishing world, and it gives those in the design and production areas an opportunity to see what our peers are doing.”

The award selection for Jacket/Cover Design – Large Format Books was based on strong shelf appeal and overall design and production quality, photography, artwork, and/or typography to enhance the subject matter.

Photographer Sam Webb of Borrego Springs tied the past to the present with his two winning photographs. The top photograph shows the ancestral lands where elephant-like gomphotheres once roamed through Borrego Valley millions of years ago and where Breceda’s life-like sculptures now stand. The bottom photograph captures Breceda telling first-grade students enrolled in a Dual Language Program at Borrego Springs Elementary School how he made the gomphotheres.





## 150<sup>th</sup> Anniversary of the 1862 San Diego Earthquake

This month marks the 150<sup>th</sup> anniversary of the San Diego Earthquake. On May 27<sup>th</sup>, 1862, a strong earthquake struck the San Diego region. Referred to as “San Diego’s Day of Terror” by the *Los Angeles Star*, the quake was felt strongly throughout the county. Minor damage occurred throughout the city of San Diego – walls and windows were cracked in Old Town, as was the tower on the Point Loma Lighthouse. The San Diego River, which was considerably high at the time following heavy rains, washed over its banks, and cracks formed in the sandy ground nearby. Likewise, cracks formed on the beach at La Playa (near Point Loma), and water was thrown up and out of the ground. The tide was observed to rise several feet above normal in the San Diego Bay. Bluff failures occurred from La Playa to Point Loma. Fortunately, no lives were lost and no buildings were toppled during this event.

When this temblor occurred, San Diego County was sparsely populated, and the city had no local newspaper. Therefore, few eyewitness accounts are available in the historical record, and little is known or understood about this earthquake. Based on available historical information, much of which was uncovered by Mark Legg while conducting research in the late 1970’s, the magnitude is estimated at 6, but the epicenter has never been determined, and no one is certain which fault generated the quake. The highest intensities were reportedly near the coast, at Old Town and Point Loma. The quake was reportedly felt strongly at Vallecitos, but only minor shaking occurred at Mesa Grande and no shaking was felt in Yuma. Reports from San Dieguito, Guajome, Temecula, and Agua Hedionda indicated strong shaking. The quake was felt in Anaheim and as far north as Los Angeles. No accounts exist from areas south or west of the region. Aftershocks were felt through the 14<sup>th</sup> of June.

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## 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](http://www.linkedin.com/in/cbclifton2010). Email [cbc2006@cox.net](mailto:cbc2006@cox.net) or 619-964-1776. Contact: Clay Clifton

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**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](mailto:Afyodorova103@gmail.com)

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## 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>.

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**Seeking a 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](mailto:resumes@proconnectweb.com)

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**Sealaska Environmental Services, LLC (SES)** is seeking a motivated individual with relevant environmental experience as a Project Manager, to perform all functions in managing projects under U.S. government contracts requiring environmental remedies at various governmental sites, primarily in California. This position is for our San Diego office. The minimum qualifications are:

- Undergraduate degree in engineering or physical science;

- A minimum of six (6) years environmental project management experience, including three (3) years of experience managing remediation projects; and
- Registered professional engineer or registered geologist in the state of California.

The Project Managers' duties and responsibilities are described at the SES website:

<http://tbe.taleo.net/NA11/ats/careers/requisition.jsp?org=SEALASKA&cws=1&rid=491>

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**Civil Engineer -TerraCosta Consulting Group** is a 25-year specialty design firm providing services in two basic areas: earth retention & foundation design systems; and coastal and maritime engineering.

We are looking for a civil engineer with a geotechnical background, 3 to 5 years experience, and City of San Diego certification in concrete inspection, reinforced concrete inspection, and deep foundation/tieback inspection. Our immediate need is for a field engineer to implement geotechnical design recommendations in the field on construction projects, and perform in-office design work. Ample opportunity exists for career enhancement and growth in the areas of project design and project management. Some travel required.

Minimum Bachelors Degree in Civil Engineering (preferably with geotechnical emphasis) required. Professional registration preferred.

This is a full-time position with great benefits (401k, health, etc.). Salary commensurate with experience.

**Email resume and salary requirements to:** [employment@terracosta.com](mailto:employment@terracosta.com)

**No calls please!**

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Contact: **Dave Bloom**



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<http://www.missiongeoscience.com/>

Contact: **Jim Ashby**



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Contact: **Steve Zigan**

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