



April 2018

LOS ANGELES BASIN GEOLOGICAL SOCIETY MEETING ANNOUNCEMENT

April 26 (Thursday) – 11:30 AM

Benjamin Hagedorn, PhD

Assistant Professor, California State University Long Beach

STRESSED WATERSHEDS OF THE US SOUTHWEST: RESULTS FROM BASELINE HYDROLOGIC STUDIES OF CATALINA ISLAND AND THE SOUTH COAST RANGE

Abstract

California's ongoing, record-breaking drought and increasing water demands from an increasing population have put groundwater resources under great stress. This presentation summarizes results of two case studies of groundwater supply sustainability from the perspective of quantity (i.e., overdraft vulnerability) and quality (i.e., pollution vulnerability). In the first study, the GIS-based, USGS-developed Soil Water Balance (SWB) model was applied to estimate recharge and sustainable yield for Catalina Island for 2008 - 2014. The results revealed very low recharge values, comparable to values estimated for deserts instead of a Mediterranean climate setting. Sensitivity analysis results showed an unresolved discrepancy in dominance of land cover type (i.e., herbaceous grass vs. chaparral/coastal sage) to be a significant factor affecting modeled recharge. Were a greater portion of land cover actually considered herbaceous grasses (as field studies from the early 1980s implied), recharge estimates would nearly double. Nevertheless, the calculated generally low recharge rates and fact that drought conditions in Southern California have worsened since 2014 suggest large parts of the island may not have received groundwater recharge in nearly a decade.

In the second study, a multi tracer approach was applied to assess groundwater nitrate pollution vulnerability in the South Coast Range's Coastal study unit within a Priority Basin strongly affected by agriculture. Results show nitrate contamination was best predicted using two variables: 1) the dissolved oxygen concentration; and 2) the proportion of

modern water recharged less than 60 years ago. Other public-domain datasets, such as land use/cover and well construction, were statistically insignificant and therefore not useful pollution predictors. The approach used may provide valuable constraints on pollution vulnerability in watersheds where agricultural practices have not yet (or only recently) started, or where more refined datasets for fertilizer applications and crop nitrogen uptake are limited.

Speaker's Biography

Dr. Hagedorn is an environmental geochemist from Germany. He earned his PhD in aqueous geochemistry from Monash University in Melbourne, Australia. Before joining CSULB, he worked as a post-doctoral scholar at the Water Resources Research Center of the University of Hawai'i Manoa.

On islands and in coastal watersheds, residents rely on potable water that is derived mainly from underground aquifers. The parameters controlling groundwater availability and quality in such settings are not well understood. Dr. Hagedorn's research addresses how water systems function in areas where fresh water is sparse and sustainable usage of this limited resource is critical. His work focuses primarily on quantification of groundwater recharge and nutrient transport in coastal watersheds, and on environmental forensics (that is, the chemical "fingerprinting" of pollutants in groundwater/soil systems).

Join us for Ben's timely and informative presentation!

Meeting Time, Place, Cost, and Reservations

When:

Thursday, April 26, 2018

Meeting Agenda

Lunch Served: 11:30 AM to 11:45PM
Announcements: 11:45 AM to 12:00 PM
Guest Speaker: 12:00 PM to 12:45 PM
Questions/Close: 12:45 PM to 1:00 PM

Place:

The Grand at Willow Street Conference Center located at 4101 East Willow Street, Long Beach, CA (562-426-0555). Take Lakewood Boulevard south from the San Diego Freeway (I-405), turn west onto Willow Street, and turn right onto Grand Avenue at the sign for the Center. Park for free in the multi-level garage structure.

Cost (note recent price increase):

Lunch and Speaker: \$30.00 with reservations
\$35.00 without reservations
Retired: \$25.00
Student: \$10.00

PAYMENTS IN CASH OR CHECK ONLY

Meeting Reservations:

We encourage you to make your reservations using the LABGS web site, at www.labgs.org

Or, call Maia Davis at (530) 559-1404, or e-mail maiac.davis@gmail.com.

Reservations must be made by: **10:00 AM Tuesday April 24th** to receive reservations discount price noted above (this will be strictly adhered to)
But as always, walk-ins are welcome!

LABGS Board Contact Information:

President: Bert Vogler

(949) 585-3103

hvogler@kleinfelder.com

VP & Programs: Nate Busch

(714) 667-2300

nbusch@eecenvironmental.com

Treasurer: Nicky Oliver

(626) 305-8460

noliver@geomechanicstech.com

Secretary: Maia Davis

(530) 559-1404

maiac.davis@gmail.com

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(714) 658-0474

ktrk2@aol.com

Special Projects: Bill Long

(213) 448-2841

wtlgeoscience@gmail.com

Webmaster: Ivan Aburto

(661) 529-4331

iaburto@labgs.org

OUR WEB SITE ADDRESS:

www.labgs.org

ANNOUNCEMENTS:

The Annual PSAAPG Convention is in Bakersfield on April 22nd to 25th, 2018!
<https://www.psaapg2018.org/>

LABGS is expanding our meeting raffles, so we would appreciate candidate raffle prize donations! Please bring item donations to the next meeting.

Please inform a LABGS Board member if you have a pertinent announcement.