

Faulted coal seam Upper K Andean Foothills GSA Field Trip Jan 2002 by Ross and Barney C McCasland

## PBS-SEPM NEWSLETTER

September 2020

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Title: Sourcing and  
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unpermitted produced  
water dumping,  
Permian Basin, USA  
**\*NOTICE DATE**  
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### KEY DATES For September and October 2020

#### SEPTEMBER 2020

- **10: SPE C&O Production Management Symposium, Virtual Sessions**
- **21: SPE/AAPG MIT Luncheon**, Virtual, 11:30am-1pm, Najaf Dostaliyev, "LinkedIn: How to Use it & What Strategies to Apply"
- **23-24: WTGS Virtual Fall Symposium**
- **25: SPE-PB Section Meeting**
- **29: PBS-SEPM Luncheon**, Bush Convention Center & Zoom, 11:30am-1pm, Dr. Mark Engle
- **29: SPWLA-PB Virtual Luncheon**, 11:50am-1pm, Harry Xi, The Role of Organic Matter in Characterizing

Unconventional Tight Rocks Using  
Laboratory NMR

#### OCTOBER 2020

- **1: WTGS Luncheon**, Midland Country Club, 11:30am-1pm, John Brotherton, Tectonic evolution of the Pennsylvanian-early Permian Orogrograde basin revealed through backstripped subsidence curves and structural analysis
- **20: PBS-SEPM Luncheon**, Bush Convention Center & Zoom, 11:30am-1pm, Dr. Shuvajit Bhattacharya, BEG
- **23: SP-PB Plays & Clays**, Jake's Clays
- **27: SPWLA-PB Virtual Luncheon**, 11:50am-1pm, TBD



## President's Column

This first week of September is blowing in changes. It is not officially fall yet, but I certainly noticed a change in weather, marking the first “cool and humid” morning, which led to an afternoon that did not even break 95°F!

This month also marks the beginning of a new luncheon season for PBS-SEPM. Along with the start of this year, we are starting something new for the luncheons: MVP Technical Talks ... No, no, not “Most Valuable Player”, but Mixed Virtual and Physical presentations. For the first time ever, our speaker will be talking to the lunch crowd via web broadcast. Our 2nd VP, Norman Wells, Jr. is the one to thank for this innovation. In addition to having our speaker virtually with us, our luncheons are also available through the virtual platform, so members who are not able to attend in person, out-of-town members, interested parties in far-flung locations, and Permian Basin students everywhere, can all meet with those of us who can dine together while we learn.

The Board has considered the ramifications of these new options and what they mean for pricing. For example, the Virtual Visitors do not eat, so shouldn't they pay a lower price? With this in mind, we have a new price structure: those who get a meal with an RSVP by the Friday before will be charged \$25; those walk-ins who get a meal without a reservation will pay \$30; those who bring their own lunch (in person or by joining virtually) will pay \$10; students in person will pay \$10 (regardless of meal choice), and students (or a group of students on a single computer) will also pay \$10.

As we start a new year, please say a quick “thank you” to any of the 2019-2020 luncheon speakers you know: Randi S. Martinsen, Cyrille Defeu, Greg Salter, Dr. Miles Henderson, Dr. Cory Hoffman, Dr. Jim Puckett, Dr. Lee F. Krystinik (Robert L. Read, Jr. Memorial Distinguished Lecturer), Dr. Robert “Bob” Lindsay, Sarah Tamilarasan, and Dr. Rebecca Dodge. Without your continued support and interest, we would not have the draw to bring these interesting talks by superb authors. Speaking of speakers... we do have a few spots still open for this year, so let Norm know if you want to volunteer, or if you have a great idea to volunteer someone else.

The final new thing I would like to mention relate to students and communications. The Board is working on a new scholarship to honor Sue Tomlinson Reid. If you would like to be part of the charter donor group, please let me know. In addition to the website and periodic emails, we are also trying to keep our LinkedIn Page up to date, so “follow” us there, if you don't already, to be notified of new information as it comes out.

Stay safe, and I hope to See You (or virtually “see” you) in September!

Mike Raines  
PBS-SEPM President 2020-2021





## PBS-SEPM Luncheon Talk – September 29, 2020

### Dr. Mark Engle

*“Sourcing and characterizing geochemical changes from unpermitted produced water dumping, Permian Basin, USA”*

**Geological Sciences Department, UTEP**

Tuesday, September 29th, 2020 - [Bush Convention Center](#), 11:30 a.m.  
~Will be available virtually through Zoom, link will be available after RSVP for that option~  
**\*NOTE: Last Tuesday due to WTGS Virtual Fall Symposium\***

### Abstract

Produced waters are the most voluminous waste stream of hydrocarbon production, with the Permian Basin of New Mexico and Texas producing more than 107 barrels/day (1.7x10<sup>9</sup> L/day). Despite calls for better produced water management in this semi-arid region, unpermitted produced waters dumping remains a serious problem. This study focuses on the chemical and isotopic composition of 41 surface (0-5 cm) and core (0-30 cm) soil samples from 5 dump sites in the Mescalero sand dunes, southeast New Mexico. Surface samples identified as those impacted by produced water dumps (n=18) exhibit higher water content (p<0.01) and saturated electrical conductivity (up to 5.8% and 23.2 mS/cm) than control samples (n=15). Nearly all water extractable ions were enriched in dump surface samples relative to control samples, with major ions enriched by factors of 13 to 4,500 (averages).

Isometric logratios of Br, Cl, and Na in water leachates from the dump samples overlap those of nearby produced waters from tight oil (e.g., Bone Spring) and conventional gas wells, which are of paleoseawater origin. 87Sr/86Sr composition of water leachates of surface control samples (0.70850–0.70894) correspond to that of local caliche, indicating Sr originated from local dust and precipitation. 87Sr/86Sr of surface dump samples are universally higher (0.70919–0.70942) than the control samples, and can be modeled by addition of ~1-200 ml of produced water from the Bone Spring, Strawn, or Morrow reservoirs to a kg of average control sample soil. Local production data from within the study area show that roughly 80% of produced water generated during the period of dumping came from horizontal Bone Spring wells. Data from core samples show that native Sr was completely flushed out to depths >30 cm at one site but not the other, suggesting site-specific controls on sub-surface flow of waste fluids. Surface dump samples also show a ~2-fold enrichment in 226Ra and 228Ra relative to control samples, but are well below activities from mass balance mixing calculations with produced waters suggesting Ra loss prior to or after dumping occurred. Results from this initial investigation demonstrate that unpermitted dumping of produced water degrades environmental quality and can be traced using isotopic tools.



### Biography

Mark Engle is a Professor in the Dept. of Geological Sciences at the University of Texas at El Paso, where he focuses on the geochemistry and movement of fluids in sedimentary basins and at the air-surface interface. He has published nearly 100 papers, reports, and book chapters on a number of topics including the origin of produced waters from major oil gas and tight oil plays. He previously served as the chief of the U.S. Geological Survey Energy Resources Program's produced waters project, for more than a decade. He holds a Ph.D. in Hydrogeology from the University of Nevada, Reno and a B.S. with an emphasis in chemistry and earth sciences from the Evergreen State College.

*“Use it up, wear it out, make it do, or do without.”*

~New England Proverb

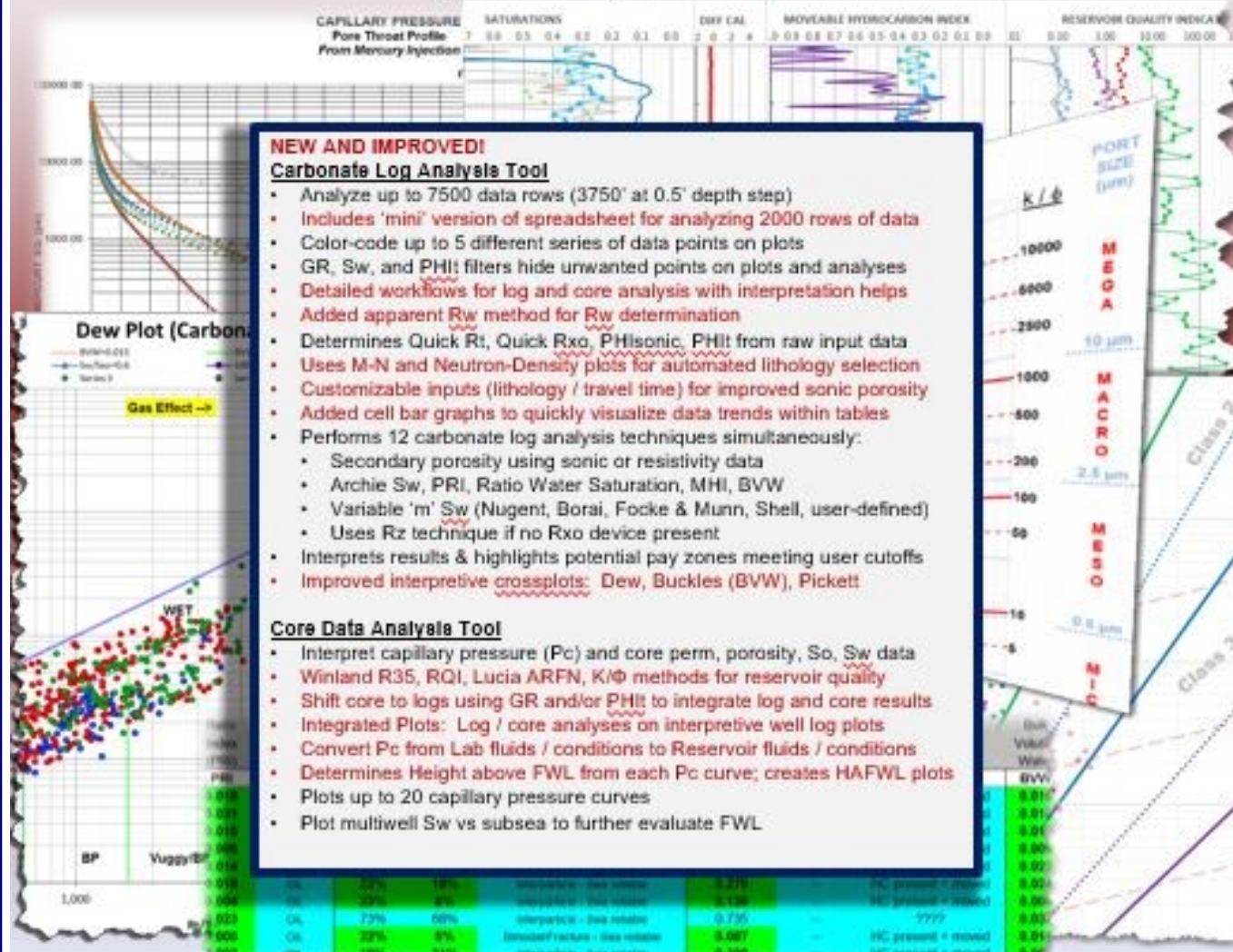


# Carbonate Log & Core Analysis Spreadsheet v. 5.0

## By Cory L. Hoffman, Ph.D.

**Major Upgrade (January 2020)! [Designed for Microsoft Excel 2013]**

Carbonate Log analysis draws heavily upon teachings of George Asquith  
Core Data analysis draws heavily upon teachings of Dan Hartmann



**Carbonate Log and Core Analysis Tool (\$50) – includes free 'mini' version and any in-version upgrades (5.x)  
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**SPE/AAPG: Permian Basin Members in Training Webinar—September 21,2020****Najaf Dostaliyev**

*“Making the Most of LinkedIn: The Things Most People Don’t Know”*

**Sales Engineer**

Monday, September 21st, 2020 - [GoToWebinar](#), 11:30 a.m.

[RSVP HERE](#) or Scan QR Code

~Unemployed members and students who want a discount  
can reach out to [fakintunji@unitexoil.com](mailto:fakintunji@unitexoil.com)~

**Abstract**

Some of us use LinkedIn on a daily or weekly basis; to check on news, to communicate with professionals in the same field, share expertise, connect with hiring managers, and look for available jobs. LinkedIn has 660 million users; it is referred to as the “world’s largest professional network”. But how much do we really know about using LinkedIn? And do we use it correctly to fit our needs? In this session, I invite you to listen and learn something new about LinkedIn that you don’t know and also share your job search experience with others.

**Biography**

Najaf Dostaliyev is a Petroleum Engineer. He first joined SPE International in 2003 when he was studying Oil and Gas Engineering at the Azerbaijan State Oil Academy. Since that time, Najaf has held many officer roles with SPE all around the world and currently is a participating officer with SPE in the Permian Basin. Najaf started his career working for Halliburton in 2007 and since then has worked in drilling and completions off and onshore, in the Caspian Sea, the Gulf of Mexico, and in several states in the US. For the past three years, he worked for FTS International, transitioning from field engineering to working as a sales engineer in Midland, Texas, overseeing business operations in the Delaware and Midland Basins. He enjoys hiking, golfing, and reading books about history and government.

*“We are very, very small, but we are profoundly capable of very, very big things.”*

-Stephen Hawking  
(1942-2018)  
Theoretical Physicist



# **WTGS**

## **Fall Symposium**

### **Bush Convention Center**

**105 N. Main Street, Midland, Texas**

**September 23 & 24, 2020**



**BETTING ON THE  
PERMIAN BASIN**

**THE UNCONVENTIONAL "ACE" UP YOUR SLEEVE**

**WTGS 2020 Fall Symposium**  
**Online Registration is now available at [www.wtgs.org](http://www.wtgs.org)**  
**September 23-24, 2020**



## Permian Basin Section-SEPM ROZ Core Workshop & Field Trip



Friday Nov. 13 (8 AM-2 PM), Bush Convention Center, Midland, Texas  
Saturday-Sunday November 14<sup>th</sup>-15<sup>th</sup>, 2020 – Field Trip, New Mexico

### Registration Form

#### PBS-SEPM is Hosting a Two-Part Residual Oil Zone (ROZ) Core Workshop and Field Trip

The ROZ Core Workshop will begin at 8 AM in the Ballroom at the Bush Convention Center. Light pastry options will be available for breakfast. We will have a total of 5 cores available:

- Goldsmith San Andres Unit #1-335A (Main Pay), XTO, Ector - Goldsmith San Andres Unit # 1-9-WC (ROZ), XTO, Ector
- Goldsmith-Landreth San Andres Unit 190, Kinder Morgan, Ector - Hanford San Andres Unit #501, Faskin, Gaines
- Shafter Silver District, Ross Mine Formation, Marfa Basin (*Faults, Hydrothermal Silver, and Oil*), Pecos (2 Cores)
- Cleveland #A-601, Riley Permian, Yoakum - Miss Kitty # 669-704, Riley Permian, Yoakum

Lunch at the Bush Convention Center will be included. The workshop will end at 2 PM. Field trip attendees will board SUVs to head to the Stevens Hotel in Carlsbad, New Mexico. Friday evening will include a group dinner along with an overview of the outcrop stops. Saturday begins at 6 AM (MT) with breakfast at the hotel and a 7 AM departure to Laurel Canyon west of Carlsbad. Box Lunch is provided (both days). Saturday stops end at Stone Canyon. Everyone is free to decide their individual plans for dinner. Sunday morning's schedule is identical to Saturday, with stops starting at Cloudcroft, then moving to Northern Ruidoso before heading east. Sunday's stops will include the present day lower San Andres recharge area west of Roswell, which has well developed karst. The trip will end with a return to Midland, arriving around 6 PM at the Bush Center.

If you are interested in sponsoring this event, either for the food, supplies, transportation, or student sponsorship, please send an email to [info@pbs-sepm.org](mailto:info@pbs-sepm.org) with your name, company, contact information, and amount you would like to contribute.

If you are interested in driving one of the 5 SUVs on this trip, please send an email to [info@pbs-sepm.org](mailto:info@pbs-sepm.org) with a copy of your Driver's License, Insurance Information, and a few notes of previous experience driving off road in SUVs.

Field trip attendance is limited to 35 registrants, on a first-come, first-served basis.

The Core Workshop and Field Trip give you a chance to see:

- The ROZ interval (and its oil saturation variations with depth)
- Lower San Andres Limestones below the ROZ
- Pay Zones in the Horizontal San Andres Play\*
- San Andres meteoric water recharge area
- Impact of Meteoric water-sweep (on fluids and rock)
- Maturity enhancements in clastics exposed to volcanics
- Diagenesis related to volcanic hydrothermal waters
- Stratigraphic and depositional styles of the San Andres
- Karst / collapse breccia in San Andres in outcrops
- Two newly slabbed silver mine cores, never before described

\* Yoakum is the most active area, with 250 wells since 2014, producing 300,000 BOPD. Riley's cores are in the heart of the play.

#### Registration Fees

Core and Field Trip: PBS-SEPM Members \$425 ( ) Non-Members \$460 ( ) \*\* Students \$325 ( )  
Workshop Only: PBS-SEPM Members \$250 ( ) Non-Members \$285 ( ) \*\* Students \$125 ( )

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To purchase online, go to <https://www.pbs-sepm.org/events-1/roz-core-workshop-and-fieldtrip> and pay by card

\*\* - Student rate is limited to full time students who are not employed full time

## PBS-SEPM Publications



### *PBS-SEPM Symposia And Core Workshops on 3 DVDs*



This is your opportunity to have the entire PBS-SEPM publication library (1955 – 2007) at your finger tips. There is a fully searchable Table of Contents—find a topic or author just by typing in the word(s). All publications are in Adobe PDF with all major articles being bookmarked, and all the figures are linked in the text for quick reference. Those areas that are off limits to geologists like the Glass Mountains or Sierra Diablos have been written up in these publications. Numerous out-of-print publications and figures and/or plates not published in the original guidebooks are now available in this library.

This includes all publications, even the special publications and coveted core workshops. Can you imagine the hidden treasures you might find? Here is your chance to uncover them in this special three (3) DVD set. *Buy one or all.*

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For additional information **contact: PBS-SEPM office** (432) 279-1360 or [info@pbs-sepm.org](mailto:info@pbs-sepm.org).



## PBS-SEPM Executive Board (2020-2021)

<b>President:</b>	Mike Raines	<a href="mailto:raines.ma@gmail.com">raines.ma@gmail.com</a>
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*Do you have an idea for an **interesting luncheon talk?** Have a **core work-shop** you'd like to present? Have some **suggestions** on how PBS-SEPM can better serve the geologic community? **Send us an e-mail to share your idea,** your PBS-SEPM Executive Board wants to hear from you!*

**Corporate Sponsorships (2020-2021) - PBS-SEPM is grateful for the generosity of these fine corporate sponsors !**

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***“Never doubt that a small group of thoughtful, committed citizens can change the world; indeed it’s the only thing that ever has.”***

**-Margaret Mead  
(1901-1978)  
Anthropologist**

## Sponsorship Information (2020-2021)

Our non-profit society relies entirely upon the efforts of dedicated volunteers to serve the geological community—primarily through educational events. The PBS-SEPM hosts luncheon lectures, core workshops and field trips that are led by experts in their chosen areas of the geosciences. If you would like to sponsor the PBS-SEPM in anyway, we have various levels of commitment you can choose from.

**Platinum:** \$1500+: Company Logo for 2 years on YPFT field trip, core workshops, luncheon slides, newsletters, website, or new publications (from date of donation)

**Gold:** \$1000: Company logo for 1 year on the YPFT field trip (which includes guidebooks and other paraphernalia-stickers, pens/pencils, rite in the rain books), luncheon slides, newsletter, and website

**Silver:** \$700: Logo on the core workshop / one day field trip (which includes guidebooks), luncheon slides, newsletter, and website

**Bronze:** \$400: Will get their logo on all PBS-SEPM luncheons, newsletters, and the website.

**Aluminum:** \$250: Will get logo on all luncheons slides, and table tent for one luncheon date.

If you are interested in a sponsorship opportunity, please call PBS-SEPM for more details at (432) 279-1360 or e-mail [info@pbs-sepm.org](mailto:info@pbs-sepm.org).

## Individual Sponsors of PBS-SEPM (2020-2021)

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Your card will be in every newsletter and on the PBS-SEPM Website for one year from August to May.



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***“There is no exercise better for the heart, than reaching down and lifting people up.”***

**-John Holmes  
22 year veteran  
US Army & NY Army  
National Guard**

**PBS-SEPM is the Permian Basin Section of SEPM—the Society for Sedimentary Geology. However, you do not need to be a SEPM member or a geologist to join PBS-SEPM.**

**PBS-SEPM prides itself on its success in providing high caliber speakers as well as exceptional core workshops and field trips. PBS-SEPM also provides scholarships to graduating high school students in western Texas and New Mexico. These scholarships are on occasion, offered to college students that have declared their desire to pursue a degree in the geosciences. Through continued support from the industry, PBS-SEPM can continue to provide excellent educational opportunities for the oil and gas industry.**

**If you would like to join PBS-SEPM, you may visit our website to learn more about us, download a membership form, and learn how to get involved.**

## **Scholarship and Distinguished Speaker Events (2020-2021)**

**Wendell J. Stewart Fund:** so named for the famous sequence stratigrapher, was initially funded by the family, and then later through PBS-SEPM members who have contributed over the years. In the past, the scholarship was established to award high school students intending to pursue a college education in the geoscience field (declared major), and had evolved to include college students actively pursuing a geology degree when there were no other qualified candidates. Funding for this scholarship has waxed and waned over the years with the changes of the petroleum industry and because this scholarship is set up in such a manner that only the interest can be used to distribute funds, most scholarships in the last 30 years have been awarded through the PBS-SEPM main budget and not the scholarship fund.

We are proud to announce that we had two receivers for the Wendell J. Stewart Scholarship Fund in May 2020: Vanessa Armendariz, an undergraduate petroleum geologist at UTPB, and Heather Dudley, a paleontology graduate student at Sul Ross.

**Robert Read Distinguished Lecturer Fund:** was founded to honor a bright, young geologist who had been an active member of both PBS-SEPM and WTGS and was tragically killed by a drunk driver. Donations from various members of both societies contributed to a membership donation fund that both encourages our continuing education efforts by helping offset the cost of bringing in a distinguished lecturer, usually in geosciences, but not required.