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<https://fourcornersgeologicalsociety.org/about/>

JANUARY DINNER MEETING

SPEAKER: Jay LeBeau, Geoscience Manager, Red Willow Production Co.
TITLE: *Basin Scale Geologic Processes Impact on Wolfcamp Unconventional Oil Play Elements, Delaware Basin, Reeves County, Texas*
DATE: Thursday, January 17th
TIME: 5:30pm Social, 6:00pm Dinner, 6:30pm Talk
LOCATION: Fort Lewis College, Student Union, Ballroom
COST: \$20/person with RSVP by deadline. 25/person post deadline and/or at the door while food lasts. \$2/person talk only. **Twenty** students can attend for free **IF** they contact Dr. Gary Gianniny (gianniny_g@fortlewis.edu) by the deadline.
RSVP: By Tuesday, January 15th at 5pm. Students, members who are pre-paying and members who just want to reserve a spot and pay at the door can all register at this link (use your preferred buttons): <https://fourcornersgeologicalsociety.org/event/basin-scale-geologic-processes-impact-on-wolfcamp-unconventional-oil-play-elements-delaware-basin-reeves-county-texas-by-jay-lebeau/>. Or you can RSVP directly to Kim Gerhardt using our officer contact link: <https://fourcornersgeologicalsociety.org/about/>.

Early Permian, 280-285Ma. Blakey, R.C., 2012. Colorado Plateau Geosystems.

 **Thank you student sponsors!!**



Red Willow sponsored 10 students!



Goodwin Consulting sponsored 7 students!

FLC HYDROLOGY CANDIDATE TALKS, Kim Hannula, Professor and Chair of Geosciences

There will be three talks by job candidates for a hydrogeology position at Fort Lewis College in January. FCGS members are invited to attend if they are interested. The talks are:

Monday, January 14, 5:00 pm, Berndt 400. Speaker: Melissa Clutter, University of Arizona. Title: Simple and robust measurement networks: Where should I install sensors in the field?

Monday, January 21, 5:00 pm, Berndt 400. Speaker: Bryan Moravec, University of Arizona. Title: The plumbing beneath our feet: The role of critical zone architecture in catchment hydrology.

Thursday, January 24, 5:30 pm, Berndt 400. Speaker: Katie Markovich, University of Arizona. Title: Linking field and numerical methods to address water scarcity in mountain systems.

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BIOGRAPHY: Jay LeBeau, Geoscience Manager,

Red Willow Production Company



Jay has worked for Red Willow Production Company in Ignacio Colorado as a staff geologist since 2006 on a variety of exploration projects focused on unconventional oil and gas plays in the San Joaquin, Williston and Delaware Basins. For the last 3 years, Jay has held the Geoscience Manager position at Red Willow working with the geoscience staff on exploration and development projects in the Delaware, San Juan and Powder River Basins.

In 2004, Jay worked for Apache Corporation in Tulsa focused on Permian reef development drilling projects on the Central Basin Platform of the Permian Basin.

Jay graduated from Kansas University with a MS in Geology in 1996 and began working for Anadarko Petroleum Corporation in Houston Texas focused on "Golden Trend" Paleozoic tight oil development projects in the Anadarko Basin. Development geology assignments followed in the East Texas Basin "Bossier" tight deep gas play and shallow shelf Tertiary projects in the Gulf of Mexico.

Jay began his petroleum geology career in 1992 providing geologic support for a Teapot Dome Shannon shallow light oil steam flood drilling program managed by the DOE in the Powder River Basin.

Jay graduated from Fort Lewis College Durango Colorado in 1988 with a BS Degree in Geology.



NEW MEXICO GEOLOGICAL SOCIETY SPRING MEETING CALL FOR ABSTRACTS

DEADLINE FRIDAY MARCH 25, 2019

The New Mexico Geological Society (NMGS) is seeking presentation and poster abstracts for their 2019 Spring New Mexico Geological Society Meeting on April 12, 2019 at the Macey Center in Socorro, NM.

The special theme this year is "Recent Advances in Geophysical Research in New Mexico", with [Alex Rinehart](#) and [Shari Kelley](#) serving as conference co-chairs. [Scott Baldridge](#), emeritus geoscientist from Los Alamos National Laboratory and one of the founders of the SAGE field program, will be the keynote speaker.

The NMGS is seeking presentation and poster abstracts for sessions focusing on the geology, hydrology, geophysics, paleontology, and mineral resources of New Mexico and adjacent areas.

For more information go to: <https://nmgs.nmt.edu/meeting/>.

Save the Date!

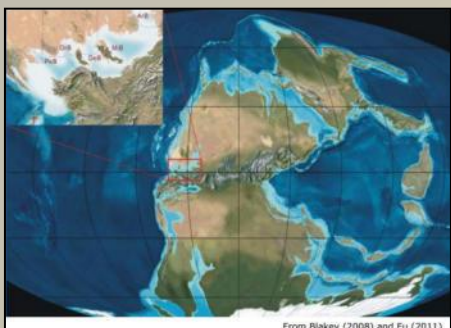
February 21st @FLC: John Lorenz & Scott P. Cooper: *Comparing Natural Fracture Systems in Reservoirs of the San Juan, Piceance, Raton and Green River Basins.*

March 14th @ FLC: Richard Goldfarb: *Orogenic Gold Exploration.*

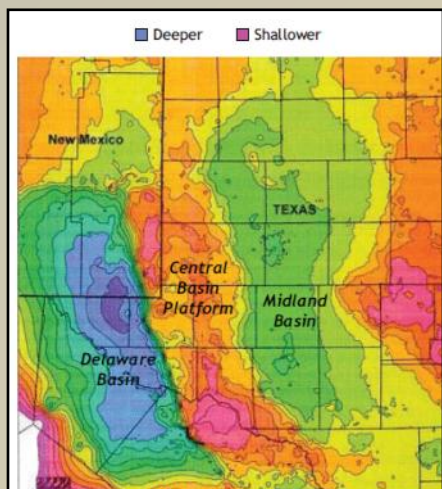
April 25th @ FLC: FLC Graduating Geoscience Seniors: *Senior Theses.*

May @ ?: TBD

Spring '19 Watch this space for Spring / Summer '19 Field Trip announcements.



Blomquist, P.K., 2016, Wolfcamp Horizontal Play, Midland Basin, West Texas, AAPG Search and Discovery Article #10890



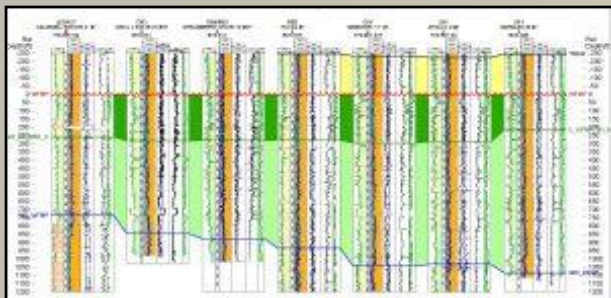
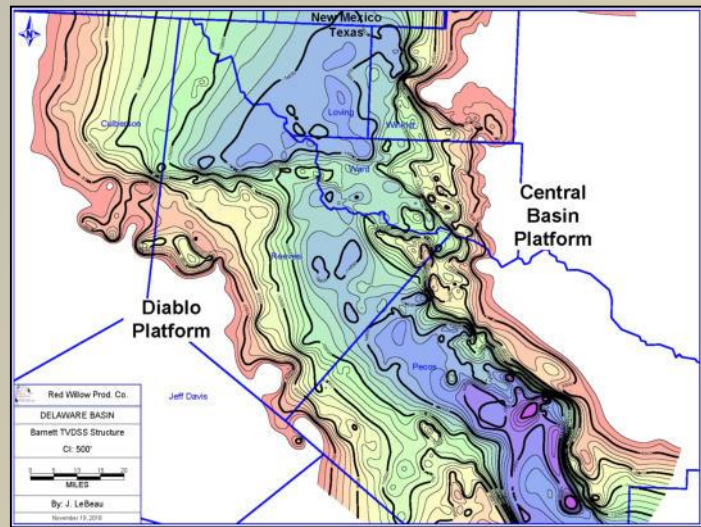
<https://info.drillinginfo.com/midland-basin-vs-delaware-basin/>



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ABSTRACT: Red Willow Production Company's investments in the Delaware Basin has provided an opportunity for the geology, engineering and land staff to witness and participate in a unconventional oil play from inception to full development; the Wolfcamp Oil Play, Reeves County Texas. This oil play began as a vertical tight oil play that commingled Wolfcamp and Bone Spring formations and has transitioned into a horizontal play focused on the Wolfcamp source rocks.

Participation in Core Labs "Avalon-Wolfcamp" and Colorado School of Mines "MUDTOC" consortiums; development of Red Willow's proprietary petrophysical models; and participation in hundreds of vertical and horizontal well in the play has led the author to conclude basin scale geologic processes control Wolfcamp source rock oil play elements demonstrating basic geology principals, mapping techniques, and "knowing your basin" are essential for success in finding and developing unconventional oil plays.

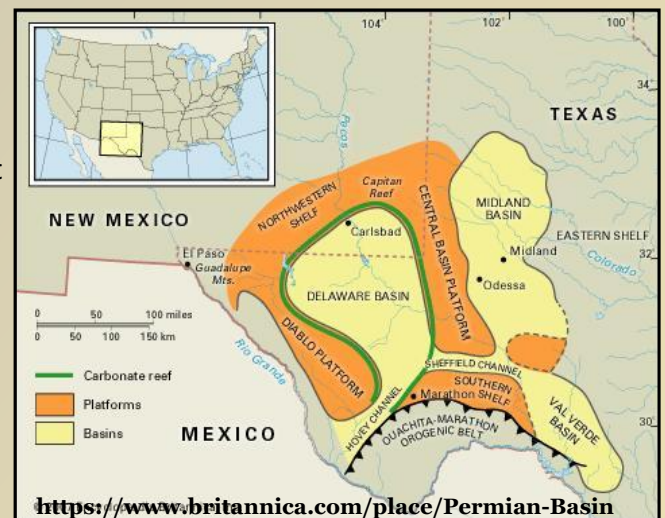


Pennsylvanian, Permian and Tertiary Tectonic events impact on the Delaware Basin include; 1) segmentation of the Delaware Basin into a north and south basin 2) formation of carbonate platform, slope and basin depositional environments; 3) complex burial history impacts on source rock maturities and 4) overpressure creation and preservation

Platform slope to basin depositional environments impact on reservoir lithology, organic content, porosity

and permeability is revealed in proprietary petrophysical models linked to unconventional core analysis databases.

Core data and petrophysical models also demonstrate the impact early Permian paleogeography and provenance to basin scale sedimentation patterns. Sedimentation from the north and south into the Delaware Basin show the influence of the Pedernal and Marathon highlands respectively. Carbonate debris flows and calciturbidites show the influence of the carbonate platform sedimentation from the east and west into the basin.



of

CONGRATULATIONS TIM RYNOTT! Winner of 2018 AAPG Distinguished Service Award

Tim Rynott, Owner of Ridge Resources, LLC in Durango, CO and our very own FCGS President has received a Distinguished Service Award from AAPG. This award is given to those "who have distinguished themselves in singular and beneficial long-term service to AAPG". Tim joined AAPG in 1982. He has served on numerous convention committees, both in the Gulf Coast Section and nationally. He was an editor of the AAPG Bulletin from 2007-2016. Tim is a longstanding member of the Division of Professional Affairs (DPA) and was the DPA luncheon speaker at the ACE convention in Salt Lake City last year. He has also served in the House of Delegates as a representative and on various committees. Tim has previously been awarded the HoD Certificate of Service and the AAPG Certificate of Merit (2017). Congrats Tim – we're glad you moved to Durango and proud to have you on the FCGS board!



"PREZ SEZ" by Tim Rynott

HAPPY NEW YEAR!

Best wishes to everyone for a healthy, prosperous, and inspiring **2019**.

To help wake up your cerebral cortex from the holiday hibernation, our President-Elect Sabina Kraushaar has arranged a



very thought-provoking presentation by Jay Lebeau, the Geoscience Manager at Red Willow Production, and a FLC Geology graduate. I had the pleasure of working with Jay a few years back, and Jay is a proven explorationist and a top geoscientist in one of the most exciting drilling areas on the planet – our geographic cousins - West Texas and SE New Mexico.

Unless you've been stranded on a desert island the past half dozen years, the Permian and Delaware Basins have become a world class energy resource, with no change in sight for multiple decades. Almost overnight the Perm-aware is now in step with OPEC as a global 'swing-producer'. For the young people reading this column, all the top prognosticators suggest excellent energy related job opportunities in this play area for many many years.

Additionally, we'd like to THANK **Red Willow Production** and **Goodwin Consulting** for being our student sponsors this month.

Red Willow has been an excellent financial contributor to FCGS over the years, and has also sponsored many many hours of volunteerism via Tom Ann Casey (Editor & Publications), John Youle and Rebecca Helms (ex-Presidents), and Jason Hooten (ex-Secretary). At 70 BCFE annual production from over 1800 wells, you might be surprised to know that RW is one of the top 25 largest privately-owned oil and gas producers in the country. Way to go Red Willow Geo's!

Goodwin Consulting is a Durango based firm which has guided domestic and International clients in valuable water saving techniques. They help both private and public entities, and considering our recent regional drought conditions (not counting the past two weeks, ha) the Goodwin's have been in high demand!!



Are you familiar the Division of Professional Affairs of the AAPG?

If not, this link below will prove useful:

www.aapg.org/divisions/dpa.

Having taken over the reins from fellow FCGS member Jeff Brame, I've become the new DPA Counselor for the Rocky Mountain Section. As such, I'd like to formally invite you to become a member of this distinguished group. The DPA is an integral part of the American Association of Petroleum Geologists, and notable DPA causes include:

- Legislative watchdog of federal and state governments
- Publicist of special position papers on scientific and professional affairs
- Organizer of the "Discovery Thinking Forum" at the AAPG Annual Convention
- Organizer of special technical sessions and short courses at national and sectional AAPG conventions.
- Promoter of professionalism and ethics in our Industry

I encourage you to join the DPA and be part of all these noble causes. To obtain specifics for joining the DPA, these links will be helpful:

[www.aapg.org/divisions/dpa/certification#142472062-](http://www.aapg.org/divisions/dpa/certification#142472062-requirements)

[requirements, www.aapg.org/divisions/dpa/join](http://www.aapg.org/divisions/dpa/join) . You are also welcome to email me for further details.

Onward and upward for another great year in beautiful SW Colorado!

See you on the 17th.....Tim



MEMBERSHIP "CATCH-UP RENEWAL, LAST CHANCE FOR DISCOUNT RATE!

Please help us out. You (hopefully) know who you are! (As by now you have received 3 email notices with PayPal invoices.)

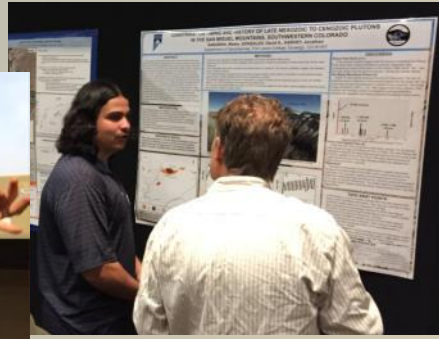
Last year the Society changed our calendar year from December through December to May through May. Memberships for those who last paid dues in early 2018 expired on December 31st. However, we are offering a "catch-up" dues payment of \$12.50 to get you paid up through May. At that point everyone will be on the same time table. This offer is only good in response to the PayPal invoice that you have received. Please pay it by our meeting on January 17th as the offer expires on February 1st when, traditionally, non-paying members are suspended.

Your help in this transition is greatly appreciated. We hope you will continue your membership and be part of our future of fun, education and service to the geoscience community.

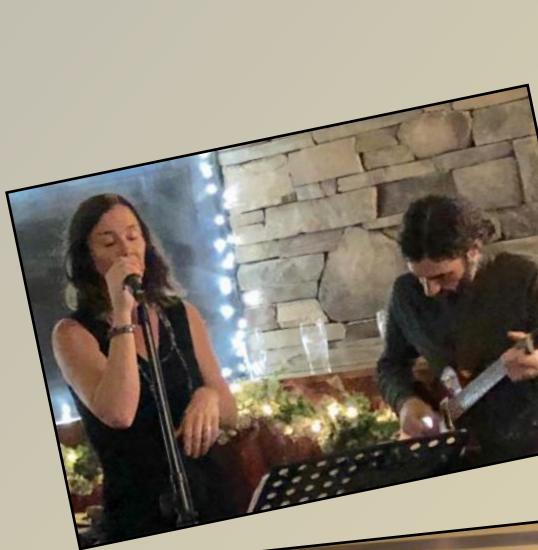


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DECEMBER MEETING



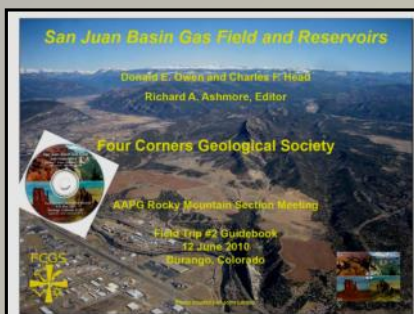
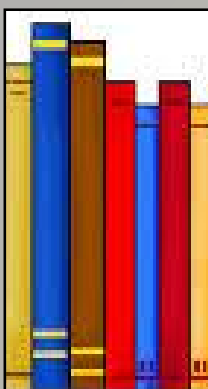
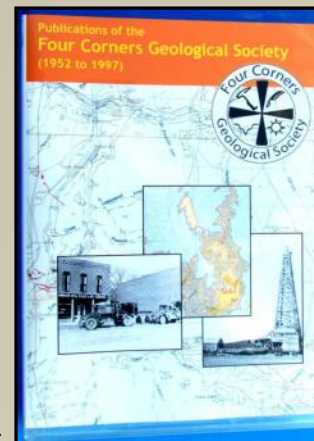
CHRISTMAS PARTY PICS!



FCGS PUBLICATIONS

Order online at: <https://fourcornersgeologicalsociety.org/bookstore/>

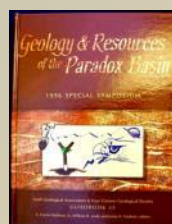
Publications of the Society: 1952-1997. This disk contains all publications of the Four Corners Geological Society (FCGS) from 1952-1997. Includes several which are out of print in hardcopy. Many contain classic papers on the geology of the Four Corners region. Much of the emphasis, but not all, is on exploration for oil and gas. Twenty publications in all. **UPDATED** - now includes Owen & Head, 2010, San Juan Basin Gas Fields and reservoirs. **\$105.**



San Juan Basin Gas Fields and Reservoirs: A Field Guide on CD. 2010, D.E. Owen and C.F. Head. A (CD) field guide of a 200 mile traverse from Durango and back into the heart of the San Juan Basin. Discussion covers Cretaceous and Tertiary reservoir outcrops, landforms, stratigraphy, history of exploration and development, and the hydrocarbon system of the basin. **\$25.**



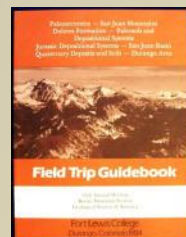
Natural Fracture Systems in the Southern Rockies. 1997. Sixteen full-length papers and 12 abstracts covering a variety of topics on natural fracture systems. Soft-spiral bound. 210p. **\$45**



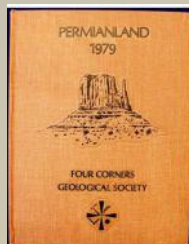
Geology & Resources of the Paradox Basin. Special Symposium with Utah Geological Association. 1996. A.C. Huffman, ed. Thirty-three technical papers and road log. Hardbound. 460p. **\$65.**



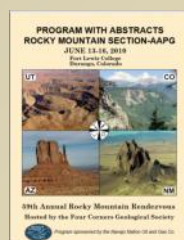
Four-Corners Oil & Gas Fields, Vols I, II, and III. Oil & gas field papers include geologic setting, discovery well drilling and completion practices, and reservoir data for each field. Vol. I&II (1978) includes 242 field papers, 726p. Vol. III (1983) has 95 field papers, 415p. Looseleaf ring binders. **\$60.**



Field Guide - Durango Vicinity. 1984, 37th Annual Meeting of Rocky Mountain Section GSA. Includes excellent road guide. Softbound. 209p. **\$22.**



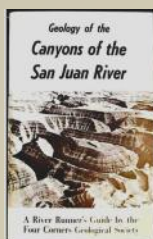
Permianland. 1979. Ninth field conference. Hardbound. 186p. **\$22**



Program with Abstracts: RMS-AAPG 2010. Programs with Abstracts Volume and CD from the 2010 Rocky Mountain Section AAPG 59th Annual Rocky Mountain Rendezvous in Durango, CO, June 13-16th 2010. **\$5.**



FOR RIVER RUNNERS!!



Geology of the Canyons of the San Juan River. 1974. The classic geologic river guide to the San Juan River from Bluff, Utah to Clay Hills Crossing. Softbound, water-resistant. 94p. **\$15.**



Cataract Canyon and Vicinity, 1987, John A. Campbell, Editor. FCGS Tenth Field Conference. Twenty eight papers, Hardbound, 199p. **\$25.**



CALL for ABSTRACTS, DEADLINE APRIL 15, 2019

The New Mexico Water Resources Research Institute announces a Call for Abstracts and Papers on topics related to the theme of the June 2019 conference, *Animas and San Juan Watersheds Conference: Successes and Challenges from Headwaters to Lake Powell*. The conference will address water quality issues in the Animas and San Juan Rivers watersheds, from the headwaters in the San Juan Mountains through the San Juan National Forest, past the mixed urban and agricultural valleys from Durango to Shiprock, and through desert canyons across the Navajo Nation into Lake Powell.

Relevant topics include the following:



ANIMAS and SAN JUAN WATERSHEDS CONFERENCE

GEOLOGY: Natural sources of heavy metal contamination in the Silverton Caldera, hard rock mining and mine drainage (including the Gold King Mine spill) and the superfund cleanup process.

FOREST: The forest connection to watershed quality, snowpack & climate change, forest fire and wetland ecosystems.

WATER USE: impact of water withdrawal, water treatment, emerging contaminants (pharmaceuticals, pesticides, per- and poly-fluoroalkyl substances (FPAS)), bacteria and nutrient pollution and agricultural water use (including soil health).

STORMWATER: water quality, ephemeral drainages, erosion.

ENERGY DEVELOPMENT: Impacts of oil and gas development, power plants, coal & uranium mining.

MONITORING: processes to monitor the aquatic food web, chemistry, sediment load & erosion.

EMERGENCY RESPONSE: Source water protection and emergency response.

Visit the NM WRRRI conference website at:

<https://animas.nmwrrri.nmsu.edu/2019/abstracts/submit-abstract/> for abstract guidelines. All abstracts must be submitted online using the provided abstract form.

Engineer Mountain in Winter

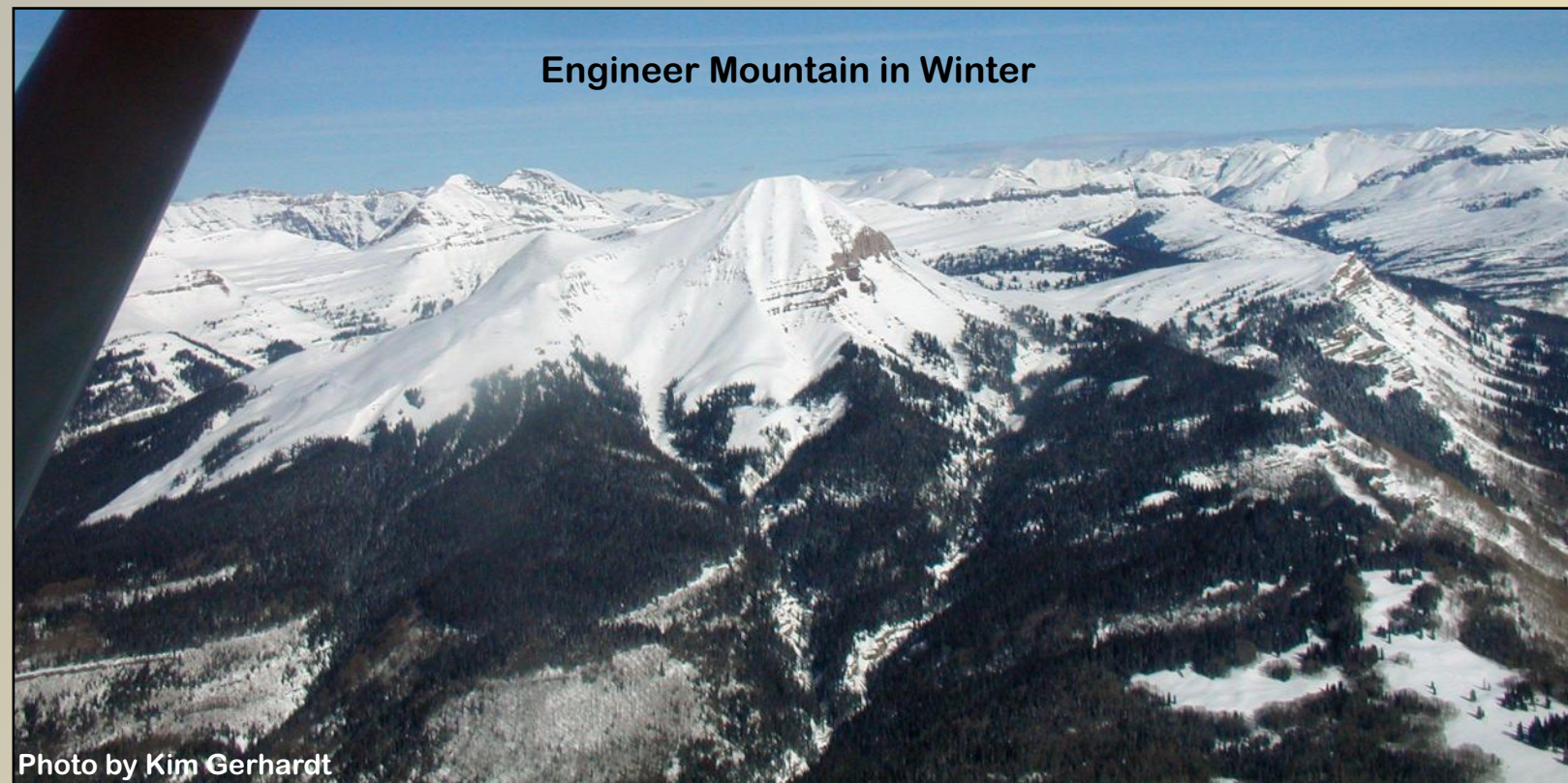


Photo by Kim Gerhardt





FOUR CORNERS GEOLOGICAL SOCIETY

P.O. Box 1501, Durango, CO 81302

MEMBERSHIP RENEWAL or APPLICATION: June 1, 2018 to May 31, 2019



*Name: _____

*Address: _____ City: _____ State: _____ Zip: _____

*Email: _____ Phone: _____

*Employer: _____

Please Identify a Membership Category:

| | | |
|-------------------------|------|--|
| Active Member | \$25 | Any person engaged in the practice or teaching of geology or who holds a Bachelor's Degree in geological science from a college of acceptable academic standards. Degree requirement may be waived if applicant has adequate professional experience. <i>*Highest Degree, Type and Year:</i> _____ <i>*College / University:</i> _____ |
| Associate Member | \$25 | Any person who is a graduate of a college of acceptable academic standards with major studies related to, or associated with, geology. Degree requirement may be waived if applicant has adequate professional experience. <i>*Highest Degree, Type and Year:</i> _____ <i>*College / University:</i> _____ |
| Student Member | Free | Any undergraduate or graduate student majoring in geology at a college of acceptable academic standards. <i>*College / University:</i> _____ <i>*Year expected to graduate:</i> _____ |
| Emeritus Member | Free | An Active Member of 65 years old or older who has been a member for 25 years including time spent in military service. <i>*Year emeritus status was awarded:</i> _____ |
| Honorary Member | Free | An Active Member who has contributed distinguished service to the profession of geology and to the betterment of the FCGS. Determination is made by the FCGS Executive Committee. <i>*Year honorarium was awarded:</i> _____ |

Other Professional Interests:

| |
|--|
| |
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** Required information for new members. Current Members, please update.*

*Please check your interests:

- ☐ Sedimentology & stratigraphy
- ☐ Structure & tectonics
- ☐ Mineralogy, petrology, geochemistry
- ☐ Igneous geology, volcanology
- ☐ Ore geology and hard rock mining
- ☐ Other mineral extraction
- ☐ Petroleum geology
- ☐ Geophysics
- ☐ Geological engineering
- ☐ Geomorphology
- ☐ Quaternary geology
- ☐ Hydrology & water resources
- ☐ Environmental geology
- ☐ Geography / GIS
- ☐ Other interest (see box)

Please either print, complete and return this form with your check for dues made payable to: "Four Corners Geological Society" and mail to the address above or go online to fourcornersgeologicalsociety.org .