

GEOLOGICAL SOCIETY OF NEVADA NEWSLETTER

Geological Society of Nevada, 2175 Raggio Parkway, Room 107, Reno, NV 89512
(775) 323-3500 - Hours Tuesday -- Friday, 8 a.m. to 3 p.m. Monday by appointment.
Website: www.gsnv.org • E-mail: gsn@gsnv.org



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Oct 5-6, 2013 Sat & Sun **GSN FALL FIELD TRIP**
Round Mountain and the Lunar Crater Volcanic Field. Contact Laura Ruud at the GSN office for more information at gsn@gsnv.org or call 775-323-3500.

Oct. 9, 2013 Wednesday **WINNEMUCCA CHAPTER MEETING (Every 2nd Wednesday)**
The monthly meeting will be held at the Martin Hotel, 94 W. Railroad St., Winnemucca, NV. **Speaker: Matt Leybourne, ALS Geochemistry.** Title: "Magmas, minerals and fluids: understanding metal sources and transport via litho-geochemistry and aqueous geochemistry: examples from the Rumble II West and Monowai calderas, Kermadec arc, New Zealand". **Food & Drinks Sponsored by: TonaTec Exploration, LLC.** Contact Andy Jansen at Andrew.jansen@newmont.com for more information. Abstract on page 6.

Oct. 17, 2013 Thursday **ELKO CHAPTER MEETING (Every 3rd Thursday)**
The monthly meeting will be held at the Western Folk Life Center, 501 Railroad St. Appetizers & drinks at 6 pm, Talk at 7 pm. **Speaker: Gabe Kassos, Newmont Mining Corp.** Title: "Geology and Mineralization of the Long Canyon Gold Deposit, Elko County, Nevada" **Food and Drinks Sponsored by LEGARZA EXPLORATION.** For more info. contact Josh Sovie, jsovie@barrick.com. Abstract on page 7.

Oct. 18, 2013 Friday **GSN MEMBERSHIP MEETING (Every 3rd Friday of the month)**
The monthly meeting will be held at the Reno Elks Lodge, 597 Kumble, Reno. Drinks at 6:00 PM, Dinner at 7:00 PM, Talk at 8:00 PM. **Speaker: Winnie Kortemeier, Western Nevada College.** Title: "INTERACTION OF PLEISTOCENE VOLCANISM WITH SHIFTING LAKE LEVEL, LAKE TAHOE". Sponsor for the evening is: **RUEN DRILLING, INC.** Dinner reservations must be made by NOON Thurs., Oct. 17th. Call Laura Ruud at 323-3500; email: gsn@gsnv.org. **DINNER \$25.00. Students eat for free! (Details pg. 3).**

Oct. 31, 2013 Thursday **SOUTHERN NEVADA CHAPTER MEETING (Every Last Thursday)**
The monthly meeting will be held at 7 p.m. in room 105 of the Lilly Fong Geosciences building, UNLV. **Speaker: Tim Marsh, Bell Copper Corp.** Title: "Geology of the Van Dyke Copper Deposit, Miami, Arizona". For more information contact Wyatt Bain, bainw1@unlv.nevada.edu. Abstract on page 8.

**IT'S TIME TO RENEW
YOUR G.S.N.
MEMBERSHIP FOR
2014!**

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FROM THE PRESIDENT
Tommy Thompson, G.S.N. President 2013-2014

Our September meeting was well-attended, and Alan Wallace gave an interesting talk weaving geology and history together about the Kennedy mining district, Pershing County, Nevada. Ann Carpenter brought the silver-gold memorial coins with John Livermore's likeness on them to our September gathering; they are being sold to support the Tonopah Historical Mining Park, a site that was supported by John from its beginning. She will be at each of the GSN Fall meetings with the coins available for purchase. They are spectacular!!

Although GSN is a non-profit organization and can't be involved in political issues, its members can be strong advocates for legislation that is pending both at the State and National levels. Two recent bills introduced in Congress will have major impacts on mining at the State and National levels: (1) H.R.687 – "Southeast Arizona Land Exchange and Conservation Act of 2013"; and (2) H.R. 761 – "National Strategic and Critical Minerals Production Act of 2013." HR687 is similar to the one that affected development of the Pumpkin Hollow Cu-Au system; both will have State and National benefits, particularly with regard to employment and taxation. HR761 will impose a deadline on the permitting process, dealing with the delays in this country that all involved in exploration and mine development have experienced. We need to encourage our Representatives to support these bills. I urge you as individuals to contact our representatives in support of mining-exploration legislation. The endangered species issues also have affected and will continue to impact mineral exploration-mine development permitting. We need to encourage support of sound studies of such issues rather than emotional outbursts from special interest groups!

Currently, the United States relies on the rest of the world for its supply of many critical minerals. We **import 100 percent of 19 key minerals** and more than 50 percent of an additional 24 minerals in order to meet our domestic manufacturing needs. The United States certainly has many of these minerals that could be put into production if the necessary permits were issued!

Quotes for the month:

Most recent discoveries of ore by geologic methods resulted from detailed studies of structural conditions and these had detailed large-scale mapping as their base! (Harrison Schmitt, 1936, EMJ, v.137, p. 557). Sampling is the process of taking a small portion of an article such that the consistency of the portion shall be representative of the whole. (Baxter and Parks, 1939, Mine Examination and Valuation: Houghton, Michigan College of Mines and Technology (TBT Comment: A University that no longer has Economic Geology faculty).

Thank you Field Trip Sponsors!



Desert Ventures, Inc.
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GSN October 18, 2013 Membership Meeting

Reservations Are Required - Please Cancel if You Are Unable to Attend

Please call 775-323-3500, Fax 775-323-3599 or e-mail gsn@gsnv.org by **Noon on Thursday, Oct. 17, 2013.**

Social Hour: 6:00 PM – Dinner: 7:00 PM – Speaker: 8:00 PM

\$25.00 per person. Location: Reno Elks Lodge, 597 Kumle Lane, Reno, Nevada

Directions: across (W) from the Reno-Sparks Convention Center

(S. Virginia Street, behind the Les Schwab Tire Center)

INTERACTION OF PLEISTOCENE VOLCANISM WITH SHIFTING LAKE LEVEL, LAKE TAHOE

Winnie Kortemeier, Western Nevada College

Pleistocene (<2.3 Ma) basaltic and trachyandesitic lavas in the northwest part of the Lake Tahoe basin, California, erupted and/or flowed into Proto-Tahoe and interacted with wet sediments, and formed a spectacular set of hydro-volcanic features. Some of the lava flows crossed Proto-Tahoe shorelines and quenched beneath water.

Lava interacted with water and wet sediments during three intervals: basaltic lava flowed into Proto-Tahoe and over wet sediments at 2.3 Ma, and from 2.1-2.0 Ma; and trachyandesitic lava flowed into the lake and invaded wet sediments at 0.92 Ma. The interactions of lava with lake water and/or sediments produced in situ-fragmented breccias, peperites, littoral cones, tuff cones, lava deltas, pillow lavas, and pillow breccias.

The Pleistocene volcanic rocks record three cycles of damming and down-cutting within the Truckee River canyon. At 2.3 Ma, basaltic lavas dammed the outlet of Proto-Tahoe and raised lake level from ~1896 m to 2048 m. At 2.1-2.0 Ma, another series of basaltic lava flows dammed the outlet of Proto-Tahoe and raised lake levels from 1914 m to 2073 m. And finally, trachyandesitic lavas dammed the outlet of Proto-Tahoe and raised lake level to 2085 m at 0.92 Ma. The lava flows document ancient lake levels up to 186 m above the present lake level during the interval 0.924 to 2.27 Ma. The new data show that the outlet for Proto-Tahoe/Lake Tahoe through the Truckee River canyon was established as early as 2.3 million years ago.



Eagle Rock: erosional remnant of 2 Ma tuff cone on west shore of Lake Tahoe

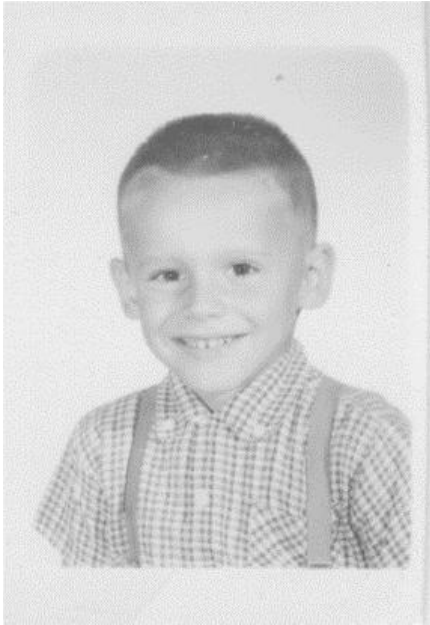
BIOGRAPHY: Winnie Kortemeier has been a professor of geosciences at Western Nevada College in Fallon and Carson City for 24 years. She received her PhD in geology from the University of Nevada, Reno in December 2012. The presentation at the October 18 GSN meeting is a portion of her dissertation, "Implications of Pleistocene Volcanic Rocks in the Northwest Part of the Lake Tahoe Basin for Evolution of Proto-Tahoe and Crust-Mantle Structure".

"FACES OF GSN"

BOB KASTELIC

G.S.N. TREASURER 2009-2014

I began my career in geology at a young age in the farm fields of northern Ohio, collecting colorful sparkly Canadian Shield rocks in the plowed glacial till after a rain. This must have been encouraged by my math-teacher father, who was also moderator of his high school's geology club. I was able to tag along on fossil-collecting field trips in the Bedford Shale, and quarries in the Berea sandstone.



After earth science classes in middle and high school, I was hooked. When it was time to pick a college, my main requirement was that they had to have a geology program. I enrolled at the University of Dayton in 1973, just far enough from home to be out of reach yet close enough to return on holidays. The best thing about UD was that I met my wife, Karen, a social work major. She kept me balanced, so I wouldn't get my head so deeply buried in rocks I'd forget about people. I also met lots of other guitar players, who kept me so occupied that school work started to impact on music playing. Maybe it was the other way around.

I was an undecided major freshman year, until taking Historical Geology from George Springer. I knew I liked geology before, but now I knew I had found a home. He was a true Ivy League-trained Renaissance man, teaching structural, igneous petrology, glacial, optical, geomorphology, and field camp with a wry sense of humor. On exam days he would walk into the classroom dressed ankle-to-Adam's-apple in black, puffing on his pipe with a smug expression. Handing out blank sheets of paper, he would scribble a few questions on the board and leave us to write our essays. He repeated his policy on exams, that if absent you were given an FBI test at a later date. Fair But Impossible. During senior year he asked if I ever

thought about grad school, pointing out that some schools even pay tuition and a stipend, and I was encouraged to take the GRE and apply.

I must have been well prepared for the test as I was offered an assistantship at Lehigh by another Ivy Leaguer Charles Sclar. He needed a lab rat to study moon rocks on a NASA grant. I had the privilege of curating a pea-sized chip of Apollo basalt, while figuring out why there were flecks of metallic iron all through it. Turns out it exsolves from ulvospinel and anorthite when hit by meteorites when there's no oxidizing atmosphere. The next year the grant ran out and I had to teach undergrad labs like everyone else. We took an economic geology field trip to upstate New York, visiting operating wollastonite, ilmenite, zinc, garnet and titanium-sand mines all in a few days. When it came time to pick a thesis topic, I found I could spend the summer mapping Precambrian rocks and iron deposits in northern New Jersey for the USGS and write a thesis about it. When Don Kohls and Bill Lindqvist of Gold Fields came by the school in 1979 to interview graduating students, I was off to northern Minnesota looking for gold.

After defending my thesis on Friday and landing in Duluth Monday, I began my career with a great group of geologists exploring for gold. I couldn't believe the good fortune, getting to hike through the woods all day, and then staying at a fishing resort paddling a canoe on the lake after coming out of the field. Not to mention getting paid for it! After lots of field work in Minnesota, Montana, New Mexico and Colorado, I was assigned to the Shafter silver project in West Texas. There's where I learned to log core, map surface and underground, and various skills exploration geologists don't learn in school and absorb on the job. (continued on page 5)

(Kasteliic, cont. from pg. 4)

Karen and I got married and had our first son while in Shafter, and we moved a couple more times ending up in Yuma to work on the Mesquite project. The discovery had just been made, and I was to help explore the region for more such deposits. After turning up some promising prospects in the area, we ended up drilling out and modeling the satellite deposits around the original Mesquite discovery. After 5 years in Yuma, we didn't consider it really hot until it was over 110 degrees. When we moved to Nevada in July of 1988, I decided I would never complain about heat again.

Spending 10 years in Winnemucca working on Chimney Creek for Gold Fields, then Twin Creeks for Santa Fe, was a great experience, seeing the project evolve from the beginning of mining to development of the Mega Pit. We found lots of gold during that time, and learned a lot about that massive Carlin-style deposit.

Taking most of 1996, I went on assignment to Ghana to work on Santa Fe's projects there. Being the first time working in another country, there was always something new and colorful to experience. We could walk through the jungle and come upon outcrops of .1 gold that had never been sampled. Not only was the geology interesting, but the people and culture were so enjoyable to learn about. They wanted to learn about American culture as much as I wanted to learn about Ghanaian ways of life.



When the downturn came in the late 90's we moved to Reno where Karen and I both went back to school. I became a Montessori teacher, spending the next 5 years teaching elementary children. It was both a very rewarding time, and the hardest job I've ever done. I have the greatest respect and appreciation for teachers.

Then it was time to get back into exploration, when the latest up-cycle began picking up steam. During a 2-year tour with Placer Dome I worked on the Limousine Butte project up until the Barrick merger. I ended up back there with US Gold (now McEwen Mining) when they took over Nevada Pacific. Since then I've been working on their extensive properties in Nevada, including Tonkin, Gold Bar and Limo.

I became treasurer of the GSN in 2009, and am proud to be part of this great organization. The more I am involved with it and the more I get to know everyone, the more I appreciate what we all bring to this amazing group.

G.S.N. WINNEMUCCA CHAPTER MEETING

Wednesday, October 9, 2013

Location: The Martin Hotel, 94 W. Railroad Street

Food and Drinks Sponsored by: TONATEC EXPLORATION, LLC



Speaker: Matt Leybourne, ALS Geochemistry, Vancouver, BC, Canada

Title: “Magmas, minerals and fluids: understanding metal sources and transport via litho-geochemistry and aqueous geochemistry: examples from the Rumble II West and Monowai calderas, Kermadec arc, New Zealand”

Seafloor imagery, volcanic rock, massive sulfide and hydrothermal plume samples ($\delta^3\text{He}$, pH, dissolved Fe and Mn, and particulate chemistry) have been collected from Rumble II West caldera. Rumble II West has an ~3 km diameter summit depression bound by ring faults with a resurgent central cone. Rocks recovered to date are predominantly mafic in composition (i.e., basalt to basaltic andesite) with volumetrically lesser intermediate rocks (i.e., andesite). Today, Rumble II West has a weak hydrothermal plume signature characterized by small, but detectable $\delta^3\text{He}$ anomaly (14%), and shift in pH (-0.03 pH units). Time-series light scattering data, obtained from vertical casts and tow-yo's with a CTDO system, show that hydrothermal activity has increased in intensity between 1999 and 2011.

Massive sulfides recovered from the eastern caldera wall and eastern flank of the central cone are primarily comprised of barite and chalcopyrite, with lesser sphalerite, pyrite and traces of galena. The weak hydrothermal plume signal indicates that the volcano is in a volcanic-hydrothermal quiescent stage compared to other volcanoes along the southern Kermadec arc, although the preponderance of barite with massive sulfide mineralization indicates higher temperature venting in the past. Of the volcanoes along the Kermadec-Tonga arc known to host massive sulfides (i.e., Clark, Rumble II West, Brothers, Monowai, volcano 19 and volcano 1), the majority (five out of six) are dominantly mafic in composition and all but one of these mafic volcanoes form moderate-size to large calderas. Laser ablation ICP-MS data from massive sulfide minerals suggests a host for a relatively large portion of the hydrothermal metal budget, in particular the Au, which has not previously been considered.

About mid-way along the ~2530 km long Tofua-Kermadec arc system NE of New Zealand lies the Monowai volcanic centre (MVC). The MVC consists of a large elongate caldera (7.9 x 5.7 km; 35 km²; floor depth around 1590 m) and a volcanically active stratovolcano on the southern flank, which rises to within ~ 100 m of the sea surface. Monowai caldera is located within an older caldera (84 km²). Unlike other calderas along the arc, mafic volcanic rocks dominate the MVC, with only uncommon basaltic andesites and rare andesites. Volcanic rocks are typical arc tholeiites with flat REE patterns, and positive anomalies in fluid mobile species (e.g., Rb, Ba, Sr, Pb) and negative anomalies in Nb and Ta relative to mid-ocean ridge basalt (MORB). Plume mapping shows at least four hydrothermal systems associated with the caldera and cone. Monowai cone has venting from the summit, as well as several vent sites inferred from plumes down the northern flank of the volcano. The caldera has a major hydrothermal vent system associated with the southwest wall of the caldera. The summit plume is gas-rich and acidic; plume samples show a pH shift of -2.00 pH units, H₂S up to 32 μM and CH₄ concentrations up to 900 nM. The summit plume has elevated total dissolvable Fe (TDFe up to 4200 nM), TDMn (up to 412 nM), and TDFe/TDMn (up to 20.4). In contrast, the caldera plumes have lower TDFe, but range to higher TDMn concentrations, and are relatively gas-poor (no H₂S detected, pH shift of -0.6 pH units, CH₄ concentrations up to 26 nM). Significantly, elevated TDMn and generally lower TDFe/TDMn for the caldera plumes compared to those on the cone we interpret to be the result of significant precipitation of Fe-sulfides in the subsurface, raising the distinct possibility for the occurrence of shallow buried massive sulfide mineralization at Monowai.

Particulate samples from both the cone sites and the caldera site are enriched in Al, Ti, Ca, Mg, Si, and S, with the cone summit plume particularly enriched in K, As, W and Cu, Pb, Zn. The elevated Ti and Al suggest acidic water-rock reactions and intense high-sulfidation like weathering of the host volcanic rocks. Observations from submersible dives with Pisces V in 2005 of the caldera site indicate numerous low temperature vents (< 60°C), with a large biomass of vent-associated fauna, in particular large accumulations of the mussel *Bathymodiolus* sp. and the tubeworm *Lamellibrachia* sp.

The MVC possesses a robust high-sulfidation magmatic-hydrothermal system. The large shifts in pH, elevated TDFe and TDFe/TDMn, H₂S-rich nature of the vent fluids and elevated Ti and Al in the particulates indicates significant magmatic volatile \pm metal contributions to the hydrothermal system. The differences and similarities between the plumes at the summit of Monowai cone and the caldera site suggest active Fe-sulfide formation in the subsurface, and the potential for the presence of significant SMS mineralization.

G.S.N. ELKO CHAPTER MEETING

Thursday, October 17, 2013

6:00 p.m.—9:00 p.m.

Location: Western Folklife Center, 501 Railroad St., Elko, Nevada

Food and Drinks Sponsored by: Legarza Exploration Drilling



Speaker: Gabe Kassos, Newmont Mining Corporation

Title: “Geology and Mineralization of the Long Canyon Gold Deposit, Elko County, Nevada”

The Long Canyon gold deposit is located in northeastern Elko County, NV and is not part of any known major gold trends in that area. Gold mineralization is hosted in Cambrian and Ordovician platform margin facies carbonate rocks. The majority of the mineralization is hosted within limestones immediately above and below the Cambrian Notch Peak dolomite. Upper zone mineralization is hosted primarily by lenticular to planar laminated limestones of the lowermost portion of the Ordovician Pogonip Group. Lower zone mineralization is hosted in lenticular laminated Notch Peak limestone, generally at the base of the Notch Peak dolomite. Minor mineralization is also hosted within the Notch Peak dolomite and Mesozoic intrusive rocks. Both reverse and normal faults help control the location of multigenerational breccia bodies, which in turn control the mineralization. Mineralization is associated with strong oxidation, decalcification, and argillization. All mineralization defined to date is oxide, with oxidation extending to depths of greater than 1,000 ft.

The Long Canyon deposit occurs as a series of subparallel NE trending zones that extend for a strike length of approximately 2 miles. The deposit plunges gently to the northeast, with lower zone mineralization outcropping in the southwest and both upper and lower zone mineralization plunging below barren Pogonip limestones to the northeast. The deposit is structurally complex in the south, with the Notch Peak dolomite dissected by both low angle and high angle normal faults. In the north, mineralization is generally coincident with the crest of a broad anticline.

**WINNEMUCCA CHAPTER
SEPTEMBER SPONSOR**



**Thanks to
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Winnemucca Chapter
meeting in September!**

**ELKO CHAPTER
SEPTEMBER SPONSOR**



**Thanks to
ENVIROSCIENTISTS, INC.
for sponsoring the
Elko Chapter meeting
in September!**

G.S.N. SOUTHERN NEVADA CHAPTER MEETING

Thursday, October 31, 2013, 7:00 p.m.

Room 105, Lilly Fong Geosciences Building, UNLV

Free food and drink—ALL ARE WELCOME!

“Geology of the Van Dyke Copper Deposit,

Miami, Arizona”

Speaker: Tim Marsh, Bell Copper Corporation

Beneath the streets of downtown Miami, Arizona is a historical inferred copper resource of 157 million tons grading 0.44% copper at a 0.15% cutoff as estimated in 1976 by Occidental Minerals Company. This estimate is historical in nature, it does not comply with NI43-101 standards, and it should not be relied upon. The deposit was originally discovered by Cleve Van Dyke, founder of the town of Miami, in 1916 when he drilled a 1900-foot churn drill hole on a ridgetop at the north edge of town, cutting copper oxides beginning at 1200 feet. A second churn drill hole 2000 feet deep located almost 1 mile to the east demonstrated that he was on to something big. Van Dyke's mine produced 12 million pounds of copper from 5% copper ore between 1929 and 1945. A modern effort by Occidental Minerals Company to develop the resource between 1966 and 1984 came to an end just when a favorable federal court decision ruled that Occidental had the right to extract ore from beneath the town, but copper prices had fallen too low to finance further work. Kocide Chemical Company in 1989 operated an in-situ mining operation on the site, producing 4 million pounds of cement copper for use as a fungicide in the Casa Grande cottonfields. Bell Copper began negotiations with the heirs of Cleve Van Dyke in March of 2010, signed a purchase agreement in February 2012, and sold the property to Copper Fox Metals in April 2013. Copper Fox Van Dyke Company is now reassaying Occidental's old pulp samples as a step toward turning Van Dyke into a current mineral resource.

Tim Marsh is CEO and Director of Bell Copper Corporation, a public Canadian copper exploration and development company striving to survive the next 12 months. He is a registered geological engineer in Arizona and has a PhD in ore deposits and exploration from Stanford University. He completed his bachelor's degree in geological engineering at Colorado School of Mines in 1986 and went straight to work for Robert Friedland at the Summitville Gold Mine, Colorado. He spent four years working in the Mohave desert at the Cactus Gold Mine, where he met and married his wife Marsha of the past 22 years (yes, she's really Marsha Marsh). After a five year stint at Stanford studying the El Hueso and Potrerillos deposits in Chile, he joined Lew Gustafson in an effort to develop a high grade underground copper-moly mine at Copper Creek, Arizona. He helped put flowers on that company's grave after a gullible CEO sent the company's funds to a Nigerian con artist. Tim joined Kennecott's effort at Resolution in 2001, became the first chief geologist of Resolution Copper Company in 2003, and took 1st place in the 2003 jackleg drilling contest in Superior. Tim left Resolution in 2005 to join Bell Copper Corporation as VP Exploration, where he has guided copper, gold, iron, nickel, and PGM exploration programs in northern British Columbia, northern Manitoba, northern Chile, southern Mexico, northern Michigan, and most importantly Arizona. He currently lives in Tucson with his two adopted Chinese daughters and long-suffering wife Marsha.

Geologists Needed! October 12 and/or 13 – to Help the Public Appreciate Geology

The Nevada Bureau of Mines & Geology (NBMG) is asking geologists (and their families and friends) to participate in the sixteenth annual Earth Science Week field trip. The same trip will be run on each of two consecutive days. These are popular trips that typically have 50 to 100 people each day. In keeping with this year's national theme, "Mapping Our World," the trip will focus on identifying rocks and minerals, then mapping the geology around the NBMG-GSN office on the DRI campus. Fresh and hydrothermally altered andesite (and related intrusive rocks) and silica ledges, characteristic of high-sulfidation epithermal gold deposits, will be easy to identify.

The trip is free, but you should register for it at <http://www.nbmg.unr.edu/>, where you can also view or download the short guidebook. The guidebook will be all a GSN member should need to be a knowledgeable co-leader on the trip. We would like to have a good number of geologists participate to answer questions from the general public and to help identify rocks and minerals that people bring from their homes.

You are welcome to help either or both days, Saturday, October 12, or Sunday, October 13. We will start promptly at 8:00 a.m. each day at the NBMG-GSN office on the west side of the DRI campus, 2175 Raggio Parkway, Reno, NV 89512. We will return to the building for breaks and lunch together to discuss what has been discovered so far. Most people will be ready to finish mapping by 3:00 or 4:00 p.m..

As an inducement, GSN members who help will receive two fantastic gifts: a Nevada-shaped pin made from a rock found near the NBMG-GSN office and a rare-earth (Fe₁₄Nd₂B) high-strength magnet on a string, the best geophysical tool for identification of magnetite and pyrrhotite.

Thanks,
Jon Price, GSN Vice President



NBMG-GSN office on the DRI campus, Reno.

A Bit of History about the Geological Society of Nevada!

The inaugural G.S.N. meeting was held on Friday, December 6, 1957 at the Mackay School of Mines on the UNR campus and Membership Dues were \$1.00

GEOLOGICAL SOCIETY OF NEVADA

Organized Friday, December 6, 1957 at Mackay School of Mines

Officers: President - V. P. Gianella, Professor, Mackay School of Mines, Emeritus.
Vice - President - D. B. Slemmons, Professor Geology, Mackay School of Mines.
Program Chairman - R. L. Rose, Nevada Bureau of Mines, University of Nevada.
Secretary - L. H. Beal, Nevada Bureau of Mines, University of Nevada.
Treasurer - Wm. P. Johnston, Consulting Geologist, Reno.

Dues \$1.00 one year.

All interested, eligible for membership.

Meetings generally to be second Friday of each month, during the academic year, to coincide with A.I.M.E. meeting date.

Meetings to be at 8:00 p.m., usually in Room 200, Mackay School of Mines

Programs:

- December 6, 1957: "Geology of the Virginia City Quadrangle", by Vincent P. Gianella
- January 10, 1958: "Thermal Remanent Magnetism and the Earth's Magnetic Pole", by Lon S. McGirk, Jr. and "Mining History of Goldfield, Nevada" by W. Smyth
- February 14, 1958: Joint meeting with A.I.M.E. Movie on topographic mapping, discussion on photogrammetric surveys and demonstrations of map making equipment (at office of Carographers, Inc.)
- March 14, 1958: "Geology of Tungsten, Nevada", by John Middlebrook, "Tungsten Ores of the Victory Mine, Gabbs Exploration Company" by Barnard York
- April 11, 1958: "Structural Geology of Cordero Mine" by Elwin Fisk "Breccia Pipes and Associated Copper Mineralization, Copper Basin Mining District, Arizona", by Wm. P. Johnston
- May 9, 1958: "Geochemical Aspects of Mercury Deposits", by George Tunell
- May 28, 1958: (Special May Meeting) "Stratigraphic Differentiation of Nevada Black Shales by Ironorganic Analyses" by Robert Collagan and "Geology of the West Side of Peavine Mountain, Washoe County, Nevada", by Larry Goodwin

GREAT BASIN & WESTERN CORDILLERA MINING GEOPHYSICS SYMPOSIUM—INAUGURAL ELKO, NEVADA ~ 23RD NOVEMBER, 2013

The GSN Elko Chapter and local Elko geophysicists are hosting the inaugural Mining Geophysics Symposium on Saturday, November 23, 2013 at the Western Folklife Center, 501 Railroad St., Elko, Nevada

CONFERENCE SCHEDULE:

7:30 A.M.—REGISTRATION AND COFFEE

8:30 A.M.—SYMPOSIUM INTRODUCTION

8:40 A.M.—SATURDAY MORNING—SESSION A “Case Histories: Sediment-hosted Deposits”

10:10 A.M.—COFFEE BREAK

10:30 A.M.—SATURDAY MORNING—SESSION B “Inversion and Application{

12:30 P.M.—LUNCH

1:30 P.M.—SATURDAY AFTERNOON—SESSION C “Case Histories: Porphyry Deposits”

3:00 P.M.—COFFEE BREAK

3:20 P.M.—SATURDAY AFTERNOON—SESSION D “Case Histories: Epithermal Deposits”

5:15—6:30 P.M.—CLOSING STATEMENTS AND REFRESHMENTS

TO REGISTER, PLEASE GO TO:

http://gsnv.org/info/events/2013_Geophysics_Symposium_Program_FINAL_13Sept'13.pdf

(Or print and fill out this form and mail to GSN, 2175 Raggio Pkwy., Reno NV 89512)

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COST: DELEGATE—\$150.00; STUDENT—\$20.00

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Please contact them by email at: mininggophysicssymposium@gmail.com for more details.

1st Annual Great Basin Rendezvous Hosted by the NMEC a Huge Success!

by Laura Ruud

I was lucky enough to be able to attend this first ever gathering of geologists, families and friends at the Lions Club campground in beautiful Lamoille Canyon Sept. 27-29. It was organized and hosted by the NMEC (Nevada Mineral Exploration Coalition). If you missed it, you must try to go next year because this was a really fun and relaxing event!

The brainchild of Dave Shaddrick and Warren Thompson, the 1st Annual Great Basin Rendezvous turned out better than imagined. This was a coming together of all ages just to enjoy each other's company and the amazing geology and scenery of the area. There were families with little ones, couples and singles, young geologists and not-so-young geologists who all had a great time hiking, eating and socializing together.

Jonathan Price and Chris Henry led separate day hikes on Saturday so all had the option of learning about the geology we were seeing. Others spent the day around the campground sighting the bighorn sheep high up on the moraine above, exploring the many trails and beaver ponds nearby, watching the pig roast and relaxing around the fire.



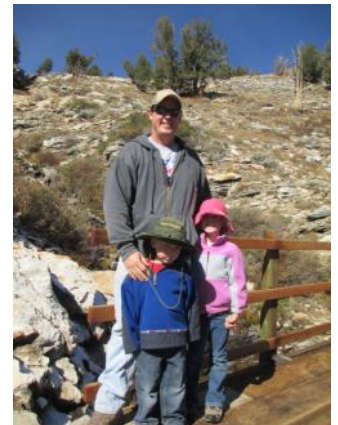
Dave Shaddrick, organizer



Island Lake was the lunch spot for Jon Price's hike.

The food was all handled by the NMEC's generous sponsors and volunteers. The group of about 80 campers were fed like kings every meal! National Wells & Pumps, Enviroscientists, Inc., Redcor Drilling, Envirotech Drilling, Newpark Drilling Fluids, Premier Gold and Harris Drilling were all sponsors of the Food & Drink for the weekend that began Friday afternoon and went through Sunday morning. We feasted on BBQ'd beef & fixins Friday night, had a huge hot breakfast with eggs, sausage & hashbrowns Saturday morning and a beautiful roasted pig with all the trimmings on Saturday evening. The weekend ended with a catered build-your-own burrito Mexican

brunch on Sunday morning. All wonderful food! Sponsors who donated camp fees & expenses included Inspectorate America Lab, JBR Environmental, Legarza Exploration and TonaTec Exploration. From what I've heard, this will be the event to look forward to in Nevada next year!



John Marma & 2 of his children on the Island Lake trail.



The Newpark Drilling Fluids crew was in charge of roasting the pig and they did a great job!



Fleet Koutz, Patrick Harris and Warren Thompson
In front of the "gathering" cabin.

*Thank you to our
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LOOKING FOR GEOLOGIST TO VOLUNTEER!

Galena Creek Park south of Reno is looking for a geologist willing to discuss geology with hikers on a Saturday morning hike in Galena Creek Park. With the resumption of the academic year, and the retreat of hot weather, they are trying to find someone who would be willing to participate in a 2-3 hour hike, on a Saturday morning, and talk about a geologic topic of interest -- which could include almost anything: the Carson Range, the Sierra Nevada, the Great Basin, Lake Tahoe, plate tectonics, etc....past, present, or future!

If you or someone you know are willing to participate, please contact John Farley at jefarley63@gmail.com.

Thanks. John Farley, Volunteer, Galena Creek Park



NEVADA MINERAL EXPLORATION COALITION

The "Voice" of Nevada Exploration

P.O. Box 1734
Elko, NV 89803
www.nvmec.org

2013 NMEC Annual General Meeting

DATE: Tuesday, October 15, 2013
Time: 8:00 a.m.—7:00 p.m. (registration opens @ 7 am)
Location: John Ascuaga's Nugget, Sparks, NV
Ponderosa Room A

Tentative Schedule:

AM—Business Meeting: Nomination/Election of Officers and other business

Panel Discussion and Talks:
Legislative Session Review/Q & A
Nevada Support of Exploration: NDOM, NBMG, CREG
Venture Capital Outlook

Hosted Luncheon: Keynote Speaker TBA, Poolside Terrace

PM _ Panel Discussions and Talks:
Sage Grouse Status Discussion
Federal Land Issues: Permitting/Withdrawals for Wilderness, Solar, etc.
Petroleum and Geothermal Exploration:
Issues and Opportunities
Making the Most of Your NMEC Membership

Hosted Reception: Heavy hors d'oeuvres and refreshments

REGISTRATION FEES (OCT 10TH):
Member—\$65, Non-Member-\$85
Late and onsite: Member—\$95, Non-Member—\$120

Register online at: <http://www.nvmec.org/#/>

Activity Update

Mike Brady, August 2013

www.activityupdate.com

NEVADA

Paramount Gold and Silver Corp. announced that recent drill results at the Sleeper/Pad Zone include 275.84-307.85 meters @ 1.47 gpt Au, 1.9 gpt Ag (PGC13-034). (resource = 326,963,000 tonnes @ 0.33 gpt Au, 3.9 gpt Ag measured+indicated) *Press Release: August 1*

Nevada Sunrise Gold Corp. announced that it would not contribute any additional funds for the exploration of the Kinsley Project with Pilot Gold Inc. This decision will therefore result in a dilution of its interest in the property to 20%. (resource = 1,795,000 tonnes @ 1.13 gpt Au inferred) *Press Release: August 15*

Veris Gold Corp. announced that it received state approval to begin using the new tailings facility at the Jerritt Canyon Complex. The old tailings pond will now be decommissioned. (reserve = 928,100 tonnes @ 3.21 gpt Au proven+probable open pit and 5,696,000 tonnes @ 5.70 gpt Au proven+probable underground) *Press Release: July 29*

Scorpio Gold Corp.(70%) announced that based on recent drill results at the Mineral Ridge Project, resources at the satellite deposits aggregate 175,400 tonnes @ 2.7 gpt Au inferred (Bluelite); 143,600 tonnes @ 2.83 gpt Au inferred (Brodie); 30,900 tonnes @ 2.08 gpt Au inferred (Solberry) and 116,300 tonnes @ 2.59 gpt Au inferred (Wedge). *Press Release: August 16*

Corvus Gold Inc. announced that recent drill results at the North Bullfrog/Sierra Blanca Project include 128.0-138.7 meters @ 0.79 gpt Au, 1.1 gpt Ag (NB13-221); 140.2-153.9 meters @ 0.45 gpt Au, 1.5 gpt Ag (NB13-222); 164.6-214.9 meters @ 0.25 gpt Au, 1.1 gpt Ag (NB13-223) and 73.2-266.7 meters @ 0.32 gpt Au, 1.1 gpt Ag (NB13-224). (resource = 15,230,000 tonnes @ 0.37 gpt Au, 0.4 gpt Ag indicated) *Press Release: August 7*

Klondex Mines Ltd. announced that development mining along the Joyce and Vonnice structures at the Fire Creek Mine has yielded 1,302 tonnes @ 119.8 gpt Au. Roughly 1,000 tonnes of material has since been shipped to Newmont's processing facilities for gold recovery. (resource

= 5,176,000 tonnes @ 9.9 gpt Au indicated) *Press Release: July 29*

Canamex Resources Corp. announced that recent drill results at the Bruner Project include 191.1-194.7 meters @ 1.21 gpt Au (B-1317); 151.1-154.7 meters @ 2.05 gpt Au (B-1318); 229.3-240.2 meters @ 7.20 gpt Au (B-1319) and 92.8-121.9 meters @ 1.17 gpt Au (B-1320). *Press Release: August 24*

Sandstorm Gold Ltd. announced that it offered to acquire Premier Royalty Inc. through a 0.145 share Sandstorm/1.0 share Premier exchange basis. Premier owns a 1.5% NSR on the Emigrant Springs Mine of Newmont Mining Corp. *Press Release: August 14*

Newmont Mining Corp. announced that reserves at the Carlin Open Pit Mine aggregate 284,700,000 tonnes @ 1.26 gpt Au proven+probable. (was 301,550,000 tonnes @ 1.30 gpt Au proven+probable) *2012 Annual Report*

Newmont Mining Corp. announced that reserves at the Carlin Underground Mine aggregate 21,364,000 tonnes @ 9.04 gpt Au proven+probable. (was 16,364,000 tonnes @ 9.62 gpt Au proven+probable) *2012 Annual Report*

Newmont Mining Corp. announced that reserves at the Midas Mine aggregate 545,000 tonnes @ 3.24 gpt Au, 266 gpt Ag proven+probable. (was 727,200 tonnes @ 7.71 gpt Au, 245.7 gpt Ag proven+probable) *2012 Annual Report*

Newmont Mining Corp.(25%) announced that reserves at the Turquoise Ridge Mine aggregate 18,545,000 tonnes @ 13.0 gpt Au proven+probable. (was 14,545,200 tonnes @ 15.1 gpt Au proven+probable) *2012 Annual Report*

Newmont Mining Corp. announced that it reached agreement with Veris Gold Corp. for them to toll-mill up to 41,000 metric tons/month of ore at their Jerritt Canyon facility. *E/MJ: August 2013*

IT'S TIME TO RENEW YOUR DUES FOR 2014!! I am including a membership form here for your convenience. You can also renew your dues online using PayPal through the GSN website: <http://gsnv.org/membership/join-gsn.php>

GEOLOGICAL SOCIETY OF NEVADA

2014

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Offices are located at NBMG's Great Basin Science Sample & Records Library at The Desert Research Institute

Office hours: 8 AM - 3:00 PM, Monday through Friday

The Geological Society of Nevada (GSN) is a non-profit, educational organization whose principal objective is to promote the advancement of geological sciences, especially as they relate to Nevada. GSN supports the dissemination of information through meetings, field trips, publications and academic endeavors. Membership is open to geologists, geophysicists, geochemists, engineers, educators, students, prospectors or anyone else with an interest in the geological sciences and/or the goals of the GSN.

The membership year begins on January 1. Annual dues of \$50.00 (\$25.00 for full time students) are due prior to December 31. The GSN conducts a Field Trip in the Fall and one in the Spring of each year. Monthly meetings are held in Reno, Winnemucca, and Las Vegas (Southern Nevada Chapter) September through May. The Elko Chapter holds meetings January through December.

Please help support the GSN Foundation when renewing. Foundation dollars are used for the Kindergarten through 12th grade Field Trip Grant Program, Nevada Mapping Grants and University of Nevada scholarships.

MEMBERSHIP APPLICATION Renewal New Date: _____

Name: _____ Position/Title: _____

Everything is the same as before, except as indicated below.

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ROCK TALK

“Why Miners Walked Away From the Planet's Richest Undeveloped Gold Deposit”

By Brad Wieners, reprinted from BusinessWeek.com online—September 27, 2013

(Corrects the length of exploratory drilling in the second graph.)

Before pulling out of the Pebble Mine project last week, Anglo American ([AAUKY](#)), one of the world's biggest mining companies, had invested six years and at least \$541 million—in a partnership with Vancouver-based Northern Dynasty Minerals ([NAK](#))—to develop the site in southwestern Alaska. Wait, pause on that number for a sec: \$541 million. That's right, the London-based multinational and its U.S. subsidiary (AA Pebble) just forfeited a return on more than half a billion dollars of its shareholders' money. By the end of its 60-day withdrawal from the project (mid-November), that figure will probably end up closer to \$580 million. Anglo American has also indicated it will write down a \$300 million loss (misreported as a “penalty” elsewhere) to remove the proposed mine as an asset from its books.

Although a far smaller player, Northern Dynasty will soon own 100 percent of the project, thought to be worth \$300 billion or more, and vows to carry on. Having completed more than a million feet of exploratory, diamond-core drilling in 1,200 holes, the former partners also amassed a 27,000-page study of the terrain, but had not begun the formal permitting process. In fact, Northern Dynasty has plowed \$180 million into Pebble since it first secured the rights to the region in 2001. Huge mining consortiums frequently seed nine-figure projects, but \$760 million-plus is still a large sum, so why did Anglo American bail now? In the statement that accompanied the Sept. 16 decision, its chief executive officer, Mark Cutifani, explained that the move was not driven by a reassessment of the site's potential, but an effort to “prioritize capital to projects with the highest value and lowest risks.”

To the energetic opponents of the mine, and they are not scarce, the greatest risk remains the one posed by the Pebble Mine to the salmon fisheries in Alaska's Bristol Bay, as well as to the overwhelmingly Native American communities that harvest the fish. Close to one-half of the world's sockeye salmon spawn in the watersheds downstream from the mine site. Could it be that Anglo American believes the Environmental Protection Agency will block the mine? (Under the Clean Water Act, the agency has the authority to veto the mine on environmental grounds.) Certainly the agency's [most recent watershed assessment](#) (PDF) suggests it might. And what of the No Dirty Gold campaign, in which more than 50 gold buyers and retailers, including Zale ([ZLC](#)), Wal-Mart ([WMT](#)), QVC ([LINTA](#)), and Balfour (the graduation ring company), signed a pledge not to buy gold from the Pebble Mine? Is “dirty gold” becoming the new conflict diamond?



Photograph by Bob Hallinen/Anchorage Daily News/MCT via Getty Images

The Upper Talarik River's headwaters are near the proposed Pebble Mine site in the Iliamna Lake area of the Alaska Peninsula

“I do not know whether the No Dirty Gold campaign contributed to Anglo American's decision. I do believe that the campaign was a meaningful part of very broad-based opposition,” says Michael Kowalski, the CEO of Tiffany ([TIF](#)), one of the most prominent signatories of the preemptive boycott. Opposition to the mine, he notes, includes a majority of Bristol Bay residents, sport and commercial fisherfolk, jewelers, and “all those concerned with protecting the Bristol Bay ecosystem. ... I assume that this diverse, robust opposition was reflected in a risk/return assessment of this project.” For its part, Anglo American is sticking to its story that there's no more to its withdrawal than an internal review of works-in-progress. Cutifani was traveling and couldn't be reached for this article, but the company's top spokesman, James Wyatt-Tilby, replied via e-mail. Did the price of gold, well below its 2011 highs, factor in? No, Wyatt-Tilby said. Had its outlook on regulators and securing permits changed? No again. “Our views on Pebble as a mining project are unchanged. ... We wish the project well, and express our thanks to those who have supported Pebble.” Asked directly about the No Dirty Gold campaign, he declined to bite, reiterating that “our decision to withdraw from the project is the result of an internal prioritisation of the many projects that we have in our portfolio.”

Anglo's departure did not have a favorable effect on Northern Dynasty's share price (down more than 50 percent to \$1.50 as of Friday). Northern Dynasty's vice president for communications, Doug Allen, did his best not to sound defensive. “We don't have a gun to our head,” says Allen. “We have no debt, \$22 million in cash, a modest burn rate, and we feel we can permit the project on our own.” Allen notes that mining giant Rio Tinto ([RIO](#)) holds an 18 percent stake in his company, and says he's aware of another mine in Alaska that was able to complete the permitting process for roughly \$15 million. Northern Dynasty, he implied, could manage that.

Nevada Petroleum & Geothermal Society

THURSDAY, OCTOBER 3, 2013

Speakers: *Jerry Walker, NPGS Secretary and Larry Garside, NPGS Field Trip Chairman*
TOPIC: *NPGS Field Trip Presentation, Walker Lane*

Ramada Reno Hotel, 1000 East 6th Street, Reno, NV
Cocktail Reception 6:30, Skyline Bar, 14th Floor
hosted by Boart Longyear. Dinner Served at 7:00 PM.
NPS Members \$20; Non-Members \$23; Students \$10.
RSVP by October 1st at the following link:

<https://docs.google.com/forms/d/1WnAKdocCpT6NjHxzCdT37uD1v9OIL8t-dXS8Xue4M/viewform>

Northern
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Section



SME
A Member Society of AIME

Monday, October 14, 2013

Technical Session Speaker & Title: TBA

Please RSVP by 5 PM, October 9, 2013
RSVP to Sarah Peters, 775-376-0677 or
speters@enviroincus.com

Happy Hour @ 6pm, Dinner @ 6:45pm; Talk @ 7:30pm
Circus-Circus Mandalay Room

Members Dinner Cost: \$25, Nonmembers Dinner Cost: \$30
Mackay students enjoy free admission & dinner

Oct. 7—Denver Region Exploration Geologists' Society. CSM Berthoud Hall Room 241. Social 6 p.m., Presentation 7 p.m. Speaker: Dr. William Fleckenstein. Title: "Shale Development and Hydraulic Fracturing". Visit their website: <http://www.dregs.org>.

Oct. 12-13—NV Petroleum & Geothermal Society Field Trip. Geothermal and Petroleum Developments in Several Extensional Basins of the Central Walker Lane, Nevada. Register @ <https://docs.google.com/forms/d/1eM3aFyVHK-mX4AwlBOpskPNOVeG71YNEOSUGZCBRH0/viewform>

Oct. 23-26—AIPG 50th Annual Meeting. Omni Interlocken Resort, Broomfield, CO. To register or sign up for field trips please visit: http://aipg.org/Events/2013/Registration_Form_CO

Oct. 24—Air & Waste Management Assoc.—Eastern Sierra Chapter Luncheon, 11:45 a.m.—1:15 p.m. Red's Old 395 Grill, Assembly Room, 1055 S. Carson Street, Carson City, NV 89501. Title: "Mine Closure: Requirements and Challenges", Speaker: Bruce Holmgren, Chief, Bureau of Mining Regulation & Reclamation, NDEP. Contact Frank Forsgren at 775-687-9364 or forsgre@ndep.nv.gov.

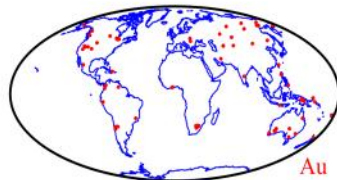
Oct. 27-30—GSA's 125th Anniversary Annual Meeting & Exposition. Colorado Convention Center, Denver, CO. Visit their website: <http://community.geosociety.org/2013AnnualMeeting/Home>

Dec. 18—GSN CHRISTMAS MEETING, SILENT AUCTION & RAFFLE. DONATIONS BEING ACCEPTED!!! Please contact: D.D. LaPointe @ dlapoint@unr.edu. Or the GSN office at gsn@gsnv.org.

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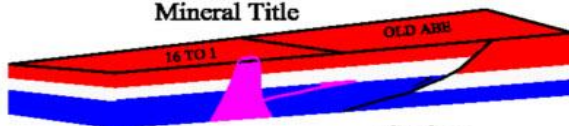
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