GSN NEWSLETTER

November 2003, Vol. 17, No. 9



Geological Society of Nevada, PO Box 13375, Reno, NV 89507 USA, 775/323-3500

FROM THE PRESIDENT

Clancy Wendt, GSN President 2003-2004

continued on page 2

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Boart Longyear to come



FROM THE PRESIDENT continued from page 1

GSN BYLAWS

The following Bylaws changes are going to be voted on at the next meeting. This person will be added to the Executive Committee.

Education Committee Chairperson

The Education Committee Chair will have the following responsibilities: Administer the GSN K-12 Earth Science Field Trip Grant Program by distributing, collecting, and evaluating grant applications annually and recommending qualified applicants to the Executive Committee for approval of funding; maintain and updating the GSN Earth Science Speakers List and making it available on demand to Nevada K-12 educators and civic groups; Act as liaison to other organizations and agencies with earth science education programs to coordinate and promote activities consistent with the educational goals and objectives of the GSN Education Committee; and organize the annual GSN Summer picnic.

ROCK RAFFLE REQUEST

It's not too early to be thinking about donations for the Geological Society of Nevada Foundation's fundraiser "Rock Raffle and Silent Auction" to be held during our annual Christmas meeting. We are seeking donation of any items suitable for raffle – gift baskets, attractive rock or mineral samples, gems or gemstones, jewelry, wine or other spirits, logo items, geological equipment or publications, commemorative coins, or any geology or mining-related items will be gratefully accepted.

The raffle proceeds will be applied to the GSN Foundation's unrestricted fund to benefit GSN's educational projects which include grants to Nevada K-12 classes for transportation on earth science related field trips, scholarships to UNR and UNLV geology students, grants to the UNR DeLaMare Library, and grants for geologic mapping in Nevada.

Please send donated items to DD LaPointe at the following address to arrive before the December meeting date, or call to arrange pick-up of donated items if you are in the Reno-Sparks-Carson City area.

Thank you! D.D. LaPointe, GSN Educational Committee Co-Chair and GSN Foundation Trustee, Nevada Bureau of Mines and Geology/MS178, University of Nevada, Reno, Reno, NV, 89557-0088, phone: 775/784-6691, ext.134, fax: 775/784-1709, e-mail: *dlapoint@unr.edu*.

The GSN Foundation wishes to thank the following donors:

Donor up to \$499 Rich Lorson-\$500 Bert Jeffries Kent Thomson Gary Fechko Camille Prenn Keith Blair Ron Parratt John Lucas Joseph Kizis Jr. Edward MacKevett Liang Chi Hsu-\$200 Howard Shafer-\$200 Mark Abrams-\$200 Cyrus Field Colin McLachlan Mario Desilets Ted Jochems Keith Bettles Maureen Leshendok William Berridge-\$100 Christopher Magee Virginia Gillerman Peter Rowley

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Ann Carpenter GSN Foundation Chairman

Greetings to all in the GSN, and many thanks for the opportunity to serve as the Foundation Chairman. I am happy to move in on the heels of Joe Kizis, and wish to thank him for all of his fine work regarding the Foundation. A promise I have for you, Joe - I will be calling you for more insights and guidance!

I look forward to working with many, both inside GSN and outside into the community, to expand the Foundation's outreach and achievements. I hope to work with many, securing the necessary funds to allow the Foundation and its programs to be successful. Please feel free to contact me with any ideas you may have at 775/849-9707.

APOLOGY TO MEMBERS

GSN would like to send out an apology to the members who attended the membership dinner on October 17th. Before everyone passed through the line the caterer ran out of Salmon and Chicken. GSN would like to strongly urge everyone who would like to eat dinner at the membership meetings to please call or email Shannon Fitzpatrick at 775/323-3500 or gsn@mines.unr.edu on the Thursday before the meeting by 11 am. We look forward to seeing you there!

Don't forget to renew your membership.

Thanks to Eklund Drilling Company, Inc. for hosting the October meeting.

Date: Friday, November 21 Time: Social-6:00, Dinner-7:00 (\$17.00), Meeting-8:00 Reservations: 775/323-3500; fax323-3599, e-mail gsn@mines.unr.edu Deadline: Reserve by noon Wednesday, November 19 Location: Elks Lodge, 597 Kumle Lane, Reno, NV

Directions: Across (W) from the Reno-Sparks Convention Center (S Virginia St), behind the Les Schwab Tire Center

Speaker/topic: J. Robert Clark and Gregory T. Hill, Probing the Subsurface with Selective Extractions of Soils: Models for the Great Basin. See abstract below.

PROBING THE SUBSURFACE WITH SELECTIVE EXTRACTIONS OF SOILS: MODELS FOR THE GREAT BASIN

J. Robert Clark, Enzyme-ACTLABS, LLC and Gregory T. Hill, Consulting Geologist

Since the introduction of the Enzyme LeachSM (EL) ten years ago, substantial refinements have been made in selective extraction technologies applied to surface soils. Numerous research studies and extensive experience with exploration projects have resulted in improved interpretive models. Initial USGS studies at Sleeper, Rabbit Creek, Mag, and Clay Pit led to the definition of the ioxidation suiteî of elements and the ioxidation anomalyî model. More recent work at locations around the world have led to the recognition of spatial patterns related to the geometries of mineralized bodies and related subsurface structural features. In some cases, dip directions can be ascertained, and there are situations where multiple selective extractions can be used in tandem to aid in developing a 3-dimensional understanding of the subsurface. Data from numerous Great Basin soil surveys show that in most cases, Au in selective extraction data accompanies anomalies that are diagnostic of Carlin type and low sulfidation epithermal Au deposits.

Most EL anomalies associated with Au deposits in the Great Basin fit the oxidation anomaly model. Oxidation anomalies were first observed in northern Nevada at the Sleeper Mine and the Rabbit Creek Mine in a USGS study that was done in 1989 and 1990, using samples collected by Tom Nash and Maurice Chaffee and analyzed with the help of GSI and Lawrence Livermore Laboratory. Trace element patterns and associations observed at those locations and at other locations in the Great Basin were used to develop the model. A suite of elements that form gaseous halides (Cl, Br, I, V, As, Se, Mo, Sb, Te, W, Re, Au, Hg, Th, and U) was observed to form very low concentration, but high contrast anomalies. These associations and patterns did not fit any existing geochemical paradigms. Members of this suite commonly associate in zoned halo patterns at the surface, bounding reduced bodies in the subsurface. Even though these early studies were often limited to one or two lines each with small numbers of samples, the observations have been widely applied throughout much of the Great Basin as well as many other parts of the world. Hundreds of oxidation anomalies have been observed on six continents, in a variety of climates, and even in marine environments.

Over time, improvements in analytical technology have resulted in 10X to 100X reductions in detection limits and much improved analytical precision. As a result, concentrations of nearly 70 elements can be determined below their normal background values. This has made it possible to precisely define characteristics of low-level responses developed among much of the periodic table. These include spatial trace element differentiations, nested halos, pinwheel patterns, and abnormal element depletions. All of these features characterize robust oxidation anomalies and are produced by the flow of electrical currents within reduced chimneys. The observed patterns indicate that most oxidation anomalies are strongly structurally controlled. Therefore, a great deal of subsurface information can be ascertained, particularly when selective extraction data are coupled with geological and/or geophysical data.

The early Great Basin studies have been followed by many other proprietary and nonproprietary studies of selective extraction responses above Nevada Au deposits. Some highlights are summarized here. Gold responses clearly define a halo within an oxidation anomaly above the Marigold 8N Carlin type deposit as described in a 2000 Hill and Clark study. As predicted by the model, zoning, nested halos, and depletions characterize the oxidation anomaly above the 8N Au deposit.

Through the 2000 Nevada Selective Leach Orientation Study, coordinated by Todd Wakefield, EL, aqua regia (AR), and fire assay (FA) data were acquired in orientation surveys over a +4 M oz. Au resource at Mike (on the Carlin trend), and blind and/or buried ore zones at four Nevada Au mines: Ken Snyder, Archimedes, Rodeo, and SSX. Although the geochemical compositions associated with each of these deposits vary significantly, most have diagnostic surface responses that include zoned and nested halos, and depletions. Gold responses occur within the EL signatures at all of these deposits except Mike. Conventional FA also shows subtle Au responses that accompany the oxidation anomalies but these are of significantly lower contrast than the EL Au responses. Because of the extremely low contrast between anomalous and background FA Au responses and a lack of clear oxidation anomaly patterns among the FA data, most FA Au peaks associated with buried or blind mineralization would likely be dismissed as background values. At Mike, background soil Au values were determined by FA but these do not indicate the mineralized zone. At Mike and Rodeo, AR results provide good indications of mineralization as do the EL data. However, the EL results show halos with up to 3 times higher contrast than the AR results. Surface responses associated with the other three deposits are much more distinctive with EL and are extremely subtle or absent with AR.

Three-dimensional geological models can be developed or enhanced by the use of selective extractions. For example, indications of dip or plunge have been found in the geochemical distributions above several buried deposits. A 1998 study by Jim Yeager at King Tonopah, shows a strong halo feature around an epithermal system and dipping Ag vein. Linear highs in a number of elements occur over the vein; however these apical responses are not coincident. Instead they parallel each other. This is apparently due to various elements being liberated at different depths, and in turn, provides a technique for determining dips within the district.

In some situations, members of the oxidation suite can occur apically over deeply buried mineralization as a result of specific redox conditions within the electrochemical cell. For example, at the Antimonio Au deposit, a 750,000 oz. resource in northern Sonora, Au, As, and Sb highs occur over the top of the Au zone. These Au and pathfinder responses are haloed by Cl, Mo, and other oxidation suite elements which are offset from each other as a result of the plunge of the Au zone. Three overlying detachment fault slices appear not to have influenced the patterns originating from the mineralized zone beneath.

An ongoing study of the I-10 Cu skarn in southern Arizona demonstrates that pairing two selective extractions, EL and TerraSol (TS), with geology, yields a 3-dimensional view that conforms with geologic information but also suggests important (feeder?) fault zones not seen through drilling. At surface, a halo around a Mo-Cu porphyry stock at 1200 feet beneath the southern end of the skarn can be seen in the EL data but is less apparent in TS data. Niobium patterns in the two selective extractions show different sets of structural features. When compared to the geologic block model for the skarn, the TS Nb distribution appears to be showing shallow plumbing while EL Nb suggests a deep feeder structure. This possible feeder zone may have provided access for hydrothermal fluids that migrated from the porphyry system upward and laterally into the forming skarn. The deep feeder zone has never been drill tested.

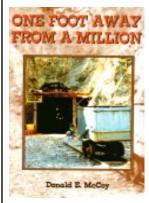
RETIREMENT PARTY

Joe and Susan Tingley are retiring from the Nevada Bureau of Mines and Geology after 25 and 33 years respectively. Please join us for a retirement party at Mi Casa Too Restaurant, 2205 W 4th St, on Tuesday, November 25 starting at 5:00 pm. This will be a casual party with a no host bar and dinner. If you plan to attend please let me know the number of people attending (including you and your guests) by email at desilets@unr.edu or phone at 775/784-6691 x125. Please pick your dinner preference: No. 2-Two Tacos, No. 7-Enchilada Ranchera (Pork), No. 11-Chile Verde (Pork), No. 14-Fajitas Burrito.

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"ONE-TO-ONE" MILLSITE OPINION REVERSED

On October 10, 2003 the Interior Department issued a long-anticipated decision from the Solicitor's Office reversing the controversial "one-to-one" millsite opinion rendered by former Solicitor John Leshy in 1997. The 1997 opinion stated that a claim owner could locate only one millsite per lode or placer claim; this severely restricted the amount of public land available for waste dumps, heap leach piles, and support buildings necessary for today's mining operations. The opinion was at variance with the historic practices of the Bureau of Land Management and Forest Service in allowing sufficient nonmineral land for mineral processing and other activities. A study of mineral patenting in the 1980s showed that the BLM approved an average of seven millsites for each lode claim. The 1997 opinion was widely assailed by the mining industry as a "back door" approach to mining law reform and as a severe limitation on mineral development.

The new opinion issued by Deputy Solicitor Roderick Walston refutes the Leshy opinion point by point in a 44page document. "We conclude that the mill site provision does not categorically limit the number of mill sites that may be located and patented to one for each mining claim and that the Department's traditional practice of not applying such a numerical limitation is in conformity with the requirements of the Mining Law.

The full text of the opinion, together with a DOI news release and a concurrent letter to Nevada Congressman Jim Gibbons, can be found at www.doi.gov/mill.html.

Thank you for your attention. Richard Harris, Attorney at Law.

NWMA 109[™] ANNUAL MEETING

The new, UPDATED convention brochure featuring the speakers and the titles of their talks is on our website (just click www.nwma.org and the brochure is the first link under "NWMA Today). The program is incredibly strong with 11 talks on new discoveries, 10 on growth companies and their exciting properties, 6 talks on B.C./Yukon opportunities, 6 talks in the SEG sponsored zinc session, 2 environmental sessions, sessions on the business of exploration and mining, operations, energy savings, industrial minerals, 2 legislative and public affairs sessions, a session on mining & communities, a session for vendors, 3 outstanding short courses, and a nearly sold out trade show. Check out the program for yourself and register today.

Also, please spread the word within your company and among your business associates.

This will be the largest mining convention in the western US in 2003. With \$375 gold, \$5 silver and 90 cent copper, there is a renewed optimism in our industry, you can't afford not to be here.

See you in December.

UP COMING EVENTS

NOV. 5th, Wednesday – WINNEMUCCA CHAPTER MEETING: Humboldt Room, Red Lion Hotel and Casino, Winnemucca, NV. Speaker: Steve Craig, Vice President Golden Phoenix Minerals, "Regional Geology and Gold Deposits of the Silver Peak Area." Refreshments start at 6:30 pm and the meeting starts at 7:00 pm. Contact Fred Breit 775/635-4704 (days) or Fred Holzel 775/625-4658 (evenings).

NOV. 12th, Wednesday – ELKO CHAPTER MEETING: Western Folklife Center, Elko, NV. Speaker: Richard Bedell. Refreshments at 6:30 pm, presentation at 7:00 pm. Contact Steve Kulinski for more information, 775/778-8867.

NOV. 21st, Friday – GSN MEMBERSHIP MEETING: Reno Elks Lodge, Reno, NV. Speaker: J. Robert Clark, Enzyme-ACTLABS, LLC and Gregory T. Hill, Consulting Geologist, "Probing the Subsurface with Selective Extractions of Soils: Models for the Great Basin." Please contact Shannon Fitzpatrick at 775/323-3500 or gsn@mines.unr.edu.

NOV. 2nd-5th – GEOLOGICAL SOCIETY OF AMERICA'S ANNUAL MEETING AND EXPOSITION: Seattle, WA. Contact Brenda Martinez at 303/357-1038 or bmartinez@geosociety.org.

TBA, Thursday – SOUTHERN NEVADA CHAPTER MEETING: Room 102, Lily Fong Geoscience Building, UNLV, Las Vegas, NV. Speaker and topic to be announced. Social with food and drink at 5:30 pm; talk at 6:30 pm. Contact Melissa Hicks at 702/895-1162 or hicksm@unlv.nevada.edu.

DEC. 1st-5th – NORTHWEST MINING ASSOCIATION'S 109th ANNUAL MEETING: Exposition and Short Courses. Red Lion Hotel at the Park, Spokane, WA. For more information contact Pat Nelsen 509/614-1158 or pnelsen@nwma.org.

DEC. 11th, Thursday — 14th AIPG Exploration Round-Up Dinner Meeting, Holiday Inn, 6th Street, 6-10 pm. Invited Speakers from 9 mining companies and 3 service companies. Cocktails-Eklund Drilling, Door Prizes-Mark Stock. Students and speakers-\$15.00, AIPG & GSN & spouses-\$25.00, Others-\$30.00. RESERVA-TIONS PLEASE: Kel Buchanan at 786-4515, fax 786-4324, e-mail summitcrk@aol.com.

2003 TIN CUP TEA AND CHUCKWAGON BBQ

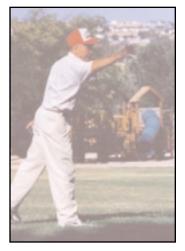
Thank you to all GSN members who helped to make the 2003 Tin Cup Tea and Chuckwagon BBQ the most successful to date! Attendance this year reached a record 674, with over \$44,000 raised for the W.M. Keck Museum at the Mackay School of Mines and the Nevada State Museum in Carson City. Included in this year's ticket price of \$45 was a live performance by the Comstock Cowboys, a BBQ by Boomtown, coffee by Starbucks, and Gigi's Kettle Corn plus plenty of beer and wine, served in your own tin cup. Governor Kenny Guinn conducted the live auction, and inside the Nevada Room, D.D. LaPointe kept tabs on an impressive silent auction featuring over 60 items. For more information regarding next year's event, tentatively scheduled for September 11, please contact Rachel Dolbier at 784-4528 or rdolbier@unr.edu.

HUMAN INTEREST Where Are They Now?

David Sheffield, a long time Elko mining-related fellow, has wandered into the hotel business. His new position is as General Manager at the High Desert Inn, and he would be very interested in talking with anyone who has convention/meeting needs. His information is: David Sheffield, General Manager, High Desert Inn, Phone: 775/777-1734 (direct line), Cell: 775/397-0886, e-mail: dsheffield@redlioncasino.com.



GSN 2003 Picnic



caption

The winners and runners up of each event were: This year's GSN picnic was held on Sunday, September 28 at the Great Basin Adventure at Rancho San Rafael in Reno, a slight departure from the usual venue at Bower's mansion. The event officially started at noon with Steve Castor firing up the BBQ's and starting the traditional roasting of marinated pork loins and Tri-tips. We had a great attendance and our members brought lots of yummy and unusual dishes representing all major animal groups. Special thanks go to Cami Prenn and Great Basin Brewery for the Icky; it was much appreciated! Jon Price once again organized the games, with a new addition of "gold pan/frisbee golf."



caption

Gold Pan Golf: 1st - Mark Vollmer 2nd - Don Hudson

Frisbee Golf: 1st - Gary Fechko 2nd - Laura & Alex Ruud Tied **Gold Pan Toss:** 1st - Peter Clarke 2nd - Charles Nimsic

Rock Hammer Throw: 1st - Alan Coyner 2nd - Jon Price Egg Toss: TIE Eric Struhsacker/Jasmine Barber Beth Price/Mark Johnson

Three-legged race: 1st - Alex & Erica Ruud 2nd - April & Jasmine Barber

GEOLOGICAL SOCIETY OF NEVADA



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Geological Society of Nevada Symposium 2005

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