

GEOLOGICAL SOCIETY OF NEVADA NEWSLETTER

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



February 2010, Vol. 25, No. 2

Published monthly except June and July

PRESIDENT

Mike Ressel
Kinross Gold USA, Inc
mikeressel@sbcglobal.net

VICE PRESIDENT

Peter Vikre
US Geological Survey
pvikre@usgs.gov

SECRETARY

Steve Carroll
Schlumberger Water Services
scarroll2@slb.com

TREASURER

Bob Kastelic
Consulting Geologist
bob_kastelic@yahoo.com

MEMBERSHIP CHAIR

Dave Emmons
Kinross Gold USA, Inc
demmons@sbcglobal.net

PUBLICATION CHAIR

Marilyn Miller
AuEx Ventures, Inc.
marilyn.miller1@sbcglobal.net

OFFICE MANAGER

Kathy Sestanovich
gsn@gsnv.org

CALENDAR OF GSN EVENTS

- Feb. 10 Wednesday** **WINNEMUCCA CHAPTER** *(Every 2nd Wednesday of the month)*
The monthly meeting will be held at the Martin Hotel, 94 West Railroad Street. Drinks and appetizers at 6:30 PM, speaker at 7:00 PM. Drinks and appetizers sponsor for the evening will be TonaTec Exploration, LLC. (Steve Bills). Speaker for the evening will be Marcus Johnston, Chief Geologist, Victoria Resources US Inc. His talk will be titled "**Nevada Metallogeny, Mineral Belts, And Ore Deposits: Age Is More Than Just A Number**". (see abstract on page 8). For more information contact Matt Hoffer at (775) 635-4756.
- Feb. 18 Thursday** **ELKO CHAPTER** *(Every 3rd Thursday of the month)*
The monthly meeting will be held at the Western Folk Life Center, 501 Railroad Street. Refreshments at 6:00 PM, talk at 7:00 PM. Speaker for the evening will be Dave Schwartz, PhD, PG, Boise, ID. His talk will be titled "**Staring at the Bark on the Trees in the Forest: Structural Misinterpretations Caused by Misunderstanding the Scale and Genetic Hierarchy of Deformational Features in Elko County, Nevada**". (see abstract on page 9). The sponsor for the evening to be announced. For more information contact Jim Essman at (775) 778-4374.
- Feb. 19 Friday** **GSN MEMBERSHIP MEETING** *(Every 3rd Friday of the month, September - May)*
The monthly meeting will be held at the Reno Elks Lodge, 597 Kumle Lane, Reno, NV. Drinks at 6:00 PM, dinner at 7:00 PM, and talk at 8:00 PM. Sponsor for the evening will be CGS, Inc. (Janette Steele). Speaker for the evening will be David Tretbar, Chief Resource Geologist, Minera San Cristobal S.A. His talk will be titled "**The San Cristóbal Zn-Pb-Ag Mine, Bolivia**". (see abstract on page 3). Dinner reservations must be made by 1:00 PM Wednesday, February 17th. Contact Kathy Sestanovich at (775) 323-3500 or e-mail gsn@gsnv.org for reservations.
- Feb. 25 Thursday** **SOUTHERN NEVADA CHAPTER** *(Every Last Thursday of the month)*
The monthly meeting will be held at the Lilly Fong Geoscience building at UNLV, Room 105. Social hour begins at 5:00 pm with the speaker starting at roughly 7:15 pm. For more information contact Josh Bonde at 702-468-2500 or Swapam Sahoo at 773-402-9347.

FROM THE PRESIDENT

Mike Ressel, *GSN President 2009-2010*

Gold Is Where You [Already] Find It!

C. Jay Hodgson, former Barrick chief geologist, addressed a packed crowd at Vancouver's Roundup on the character and distribution of big gold deposits. An interesting statistic Hodgson gave was that 80% of world gold production came from the largest 20% of significant gold mines. Hodgson indicated that all major gold deposit types are represented among giant deposits, but that the relative abundance of some types, e.g., Cu-Au porphyries, increases the odds of finding more. What Hodgson didn't discuss is the importance of grade in dictating the viability of a large deposit, and certainly there are large deposits which remain unmined as a consequence. Somewhat discouraging for pure grassroots but encouraging for Nevada, was Hodgson's comment that gold is where you [already] find it, and expect the next giant to come from under our noses. Hodgson, having ridden the tidal wave of Barrick's success in Nevada, clearly holds

GSN FEBRUARY MEETING SPONSOR



"EVERYTHING BUT THE MULE"
ANYWHERE IN THE WORLD

CGS, inc

GEOLOGICAL EQUIPMENT AND SUPPLIES

Mention this ad and receive 10% off
your next order.
Enter coupon code GSN10
for online orders

Fax: (775) 358-8209
<http://www.cgsmule.com>

1335 Greg Street, #103
Sparks, Nevada 89431
(775) 358-0923

(Continued on page 2)

May 14-22, 2010 GSN Symposium, Great Basin Evolution & Metallogeny

(Continued from page 1)

a soft spot for the geographically diminutive Great Basin. No other place on earth was as encouraging in Hodgson's view as the Great Basin, and his upbeat tone on speaking of this place clearly left an impact among attendees.

Accountability and the Science of Speculation, or "Brother, Can You Spot Me a Mine?"

As I see it, the "e" has become the operative word more than the "g" among a large segment of *economic geologists*. Perhaps in a few years, we can realign our titles, sort of like the earth does its poles every so often, to read *geological economists*. The buzz words of expected outcome, cash flow, IRR, NPV, *risk* and *yield* in all their forms, even at the earliest of exploration stages, have at times become more important in influencing outcomes than the scientifically oriented goal of finding ore and mining it. The adage of putting the cart before the horse comes to mind. Couple the growing trend of economic over-analysis by majors with a market tendency to reward only those juniors perceived as having lower risk, i.e., marketable although often, uneconomic assets, and you've got the perfect storm. The expected outcome, using the gold industry as a case study, is less exploration and more development, lots of marginal deposits, a lower discovery rate, and decreased production. As many junior gold explorers are forced more and more to prey on decades-old road kill, most majors are hovering like vultures in wait of the next fresh kill, in a scenario of window shop, drop, or spot me a mine. The fresh ones are getting fewer and farther between, and the road kill is starting to smell. Such is the "expected outcome" of an industry shaped more and more by the front office instead of the field office, business savvy but technically challenged. An ironic result in this drama of lower discovery fueling lower productivity, is higher prices, and in some strange way, a general sense of well-being.

Work Locally, Publish Locally

GSN's big event is just around the corner. More than 160 abstracts have been submitted for the symposium on topics that range broadly across the spectrum of geology and ore deposits of the Great Basin and a little beyond. We greatly appreciate the contributions and look forward to a full slate of interesting talks, posters, papers, short courses, and field trips that meld research with industry, and bring together Great Basin geologists, new and old, like no other event. The lasting legacy of the symposia, are its publications, which are valuable assets among those who work in

the Great Basin. And while they don't possess the desired global accessibility or perhaps the prestige of "higher" publications, they contain descriptive information on Nevada geology not readily found elsewhere. They are, in some important ways, more "accessible" than most or all of the 414 unique serial listings on geological sciences and mining available on-line at the University of Nevada Libraries, for they reach what is likely the most important audience of all.

Nevadans were reminded in the recent past of our youthful landscape with significant earthquakes at Wells and Mogul. Work on the Mogul earthquake swarm by UNR researchers was recently documented by National Geographic. See the video clip of some of this cutting-edge research at: http://channel.nationalgeographic.com/series/naked-science/all/Videos/07382_00#tab-Videos/07382_00

The Ralph J. Roberts Center for Research in Economic Geology has operated steadily for 13 years. The program has pumped out important graduate-level research on geology and ore deposits, especially as they pertain to Nevada. 49 students have gone through the program, and many of the students are employed in the mining and exploration industry in Nevada and elsewhere. Through mergers and down-turns, corporate sponsorships in the program have decreased to an all-time low and this despite near-record metal prices. The CREG program needs the support of Nevada's mining and exploration companies. Please consider contributing to this worthwhile program. Contact Tommy Thompson for more information on sponsorships at: tommyt@mines.unr.edu or (775) 327-5146.

Finally, the February speaker will be Dave Tretbar of Minera San Cristobal S.A. and Golden Minerals Company. Dave will discuss the geology behind the huge San Cristobal silver-zinc-lead mine in the Bolivian Andes. As is often the case with giant mineral deposits, unusual geologic circumstance led to the deposition of this extraordinary resource. Please join us on February 19th for an informative evening sponsored by CGS, Inc.

Signing out,

Mike

GSN 2010 Symposium
Early Registration through February 28th

**Thanks to The Harris Drilling Companies for hosting
The Reno GSN December Meeting**

GSN February 19, 2010 Membership Meeting

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

The reason we need reservations and also cancellations is because our caterer needs to know how many people to cook for. At the September meeting too much food was prepared because of no shows.

GSN CAN NO LONGER GUARANTEE DINNER SEATING WITHOUT ADVANCE RESERVATIONS.
Please call 775-323-3500, Fax 775-323-3599 or e-mail gsn@gsnv.org by 1:00 PM, Wednesday, February 17, 2009.
Social Hour: 6:00 PM – Dinner: 7:00 PM – Speaker: 8:00 PM
\$17.00 per person

Location: Elks Lodge, 597 Kumle Lane, Reno, NV
Directions: across (W) from the Reno-Sparks Convention Center
(S. Virginia Street, behind the Les Schwab Tire Center)

**Prepaid dinner reservations will only be accepted for the current monthly meeting.
Cancellations must be received two days before the meeting in order for your money to be refunded.**

Download the prepayment form from the GSN website: <http://www.gsnv.org/membership.html>

The San Cristóbal Zn-Pb-Ag Mine, Bolivia

David Tretbar
Chief Resource Geologist
Minera San Cristóbal

The San Cristóbal deposit is located in the Altiplano province of SW Bolivia, approximately 5 hours by road from the famous colonial mining city of Potosi. The Altiplano is an anomalously high region (4000 m) of the Central Andean Cordillera bounded by the Cordillera Occidental and Cordillera Oriental. The basement rocks of the San Cristóbal district consist of a poorly defined Paleozoic sedimentary unit overlain by the widespread, steeply dipping Tertiary Potoco Formation redbed sequence.

The deposit occurs within a 3-km-diameter diatreme breccia pipe rimmed by a circular andesite to dacite dome field. The domes exhibit characteristics indicating pre-, syn-, and post-mineral emplacement and have been dated at 8.1 to 7.2 Ma (Phillipson, 1999). The dome field encloses a central cauldron or basin containing a 300-m-thick sequence of sedimentary and volcanoclastic units. The basin formed by repeated phreatomagmatic eruptions coupled with collapse of the proposed source magma chamber.

There are two primary ore hosts at San Cristóbal: sedimentary-volcanoclastic rocks and the intrusives. The lowest unit in the basin is a pre-mineral volcanoclastic breccia unit. It is overlain by mineralized fine-grained fluvial and lacustrine sediments that contain sedimentary exhalative units; these lower sedimentary rocks are the highest grade ores in the deposit. Much of the basin fill consists of angular, coarse clasts of dacite and re-brecciated fragments in a finer-grained, bedded 'milled tuffsite' matrix; both matrix and fragments are commonly mineralized. These volcanoclastic sequences are derived from repeated phreatomagmatic eruptions. Mineralization occurs in the Tesorera and Lower Jayula intrusives as disseminations, stockwork, and vertical vein sets. Where in contact with sedimentary rocks both intrusives exhibit highly mineralized hyaloclastic breccia margins, possibly indicative of shallow emplacement into wet sediments. The primary ore minerals throughout the deposit are sphalerite, galena, and silver species including freibergite, polybasite, and rare native silver.

Mining in the district dates to the Spanish colonial period (Barba, 1637). Present-day mining activities commenced in 2007 with current mine production averaging 47,000 tpd ore. Two products, a Zn-Ag concentrate and Pb-Ag concentrate, are produced by conventional flotation and shipped by rail to the port at Mejillones, Chile. The 2009 mill production was >600,000 tonnes concentrate containing >20 Moz silver.

The San Cristóbal main deposit is not fully drilled and an active resource development drilling program is in progress. The 2008 year-end mineral resource was 489 Mt at 46.0 g/t Ag, 1.25% Zn, and 0.41% Pb and totaled 723 Moz Ag, 6.12 Mt Zn, and 2.0 Mt Pb.



TIME IS RUNNING OUT

GSN 2010 SYMPOSIUM - SIGN UP NOW!!!



REGISTER NOW!!!
GSN 2010 SYMPOSIUM
MAY 14-22

Register Online:

www.gsnv.org/symposium

Or Use the Registration Form on the Following Page

3 days of Technical Sessions
8 Field Trips
10 Short Courses
Poster Presentations/Core Shack
Exhibit Hall

Get all the details on the website: www.gsnv.org/symposium

MANY THANKS TO OUR GENEROUS SPONSORS TO DATE

PLATINUM



GOLD



SILVER

BRONZE

FRIENDS



CENTURY GOLD



SUPPORTERS

Connors Drilling Coral Gold Resources Karl Frost Gold Summit Corp Nancy Wolverson

REGISTRATION FORM
GEOLOGICAL SOCIETY OF NEVADA 2010 SYMPOSIUM
Great Basin Evolution & Metallogeny
John Ascuaga's Nugget Hotel, Sparks, Nevada
May 14th - 22nd, 2010

Exhibits and Technical Sessions **May 17th -19th**; Pre- and Post-Meeting Field Trips, Short Courses

CONTACT US: GSN 2010, 2175 Raggio Parkway, Room 205, Reno, NV 89512 (775) 846-9766 www.gsnv.org/symposium

SYMPOSIUM REGISTRATION (Registrants for Field Trips and Short Courses must register for Early, Regular, On-Site/Late or Student). All registrants receive a DVD of the Publication Volumes.

Early (GSN must receive the registration form by February 28th, 2010)		\$275	\$
Regular (between March 1st and April 30th, 2010)		\$325	\$
On-Site and Late (after April 30th, 2010)		\$375	\$
Student (must be able to show proof of student status)		\$150	\$
Exhibits-Only (may not attend technical sessions, allows access to Exhibit Hall for all activities)		\$50	\$
Keynote Luncheon – William R. Dickinson (limit 650)	May 17 th	\$45	\$
Keynote Luncheon – Jonathan G. Price (limit 650)	May 18 th	\$45	\$
Pre-Meeting Field Trips & Short Courses (Field Trips limited to 40, Short Course limits as indicated)			
FT-1	Intro to Carlin Gold Deposits -- for Geologists	May 14 th -16 th	\$325
FT-2	Epithermal Deposits of Northern Nevada	May 14 th -16 th	\$400
FT-3	Industrial Mineral Deposits of Northern NV	May 14 th -16 th	\$375
SC-1	SEG Workshop – Gold in 2010 (min. 35, limit 100) <i>Symposium Registration is encouraged, but not required.</i>	May 14 th -16 th	\$395 Member \$495 Non Member \$95 Student Members \$120 Student
SC-2	Fundamentals of 43-101 (min. 25, limit 125)	May 15 th – 16 th	\$200
SC-3	Isotopes and Exploration (min. 8, limit 18)	May 15 th – 16 th	\$450
SC-4	Structural Systematics (min. 20, limit 50)	May 15 th – 16 th	\$200/\$100 Student
SC-5	Leapfrog Software (min. 8, limit 21)	May 15 th – 16 th	\$400
Post-Meeting Field Trips & Short Courses (all Field Trips limited to 40, Short Courses limits as indicated)			
FT-4	Intro to Carlin Gold Deposits -- for Non-Geologists	May 20 th -22 nd	\$325
FT-5	Advances in Carlin Deposits of Northern Nevada	May 20 th -22 nd	\$400
FT-6	Epithermal Deposits of Central Nevada	May 20 th -22 nd	\$325
FT-7	IOCG and Porphyry-Related Deposits of Western Nevada	May 20 th -21 st	\$250
FT-8	Modern and Ancient Geothermal Systems	May 20 th -21 st	\$100
SC-6	Remote Sensing and Spectral Geology (min. 10, limit 35)	May 20 th -21 st	\$275/\$100 Student
SC-7	Arc View for Geoscientists (min. 8, limit 15) Held at UNR	May 20 th -21 st	\$670
SC-8	Molybdenum in the New Millennium (min. 10, limit 35)	May 20 th	\$300/\$75 Student
SC-9	Formation of Gold Provinces (min. 8, limit 50)	May 21 st	\$300
SC-10	Rockfall Hazards & Mitigation Techniques (min 10, limit 25)	May 20 th	\$250
			Total \$

Pre-publication order of the Symposium Volumes: (Price will be determined closer to the meeting date and all registrants will be notified. In addition, the pre-publication price will be available on site at the Symposium.)

Please make checks payable to "GSN 2010" and mail them to GSN 2010, 2175 Raggio Parkway, Room 205, Reno, NV 89512, USA. For information, see www.gsnv.org/symposium, call 775-846-9766, or e-mail secretary@gsnv.org.

Credit card payments can be made by mail, fax (775-323-3599) or on the website (www.gsnv.org/symposium).

Cancellations received by March 1st will be accepted minus 10%; from March 1st - April 30th minus 50%. No cancellations accepted after April 30th.

Guests/spouses may sign up for the exhibits-only fee, which provides access to the exhibits and to all Social Events in the Exhibit. Please complete a separate registration form for each guest. For hotel reservations at John Ascuaga's Nugget Hotel please call 1-800-648-1177 and use "Geology" as the code to get the group reservation rate. You can also go directly to the website (www.januggetsecure.com/jump/1220/) for the group reservation rate.

Your Name: _____ Title: _____

Employer: _____

Address: _____

Telephone: () _____ Email: _____

Fax: () _____ If paying by credit card, indicate **VISA/MasterCard/AMEX/Discover** provide: _____

Card #: _____ Expiration Date: _____

Three-digit number from back of card: _____ Signature: _____

In Memoriam

Clyde Boyer

Long time Nevada and Montana geologist Clyde Boyer tragically died in a car collision in Montana in December 2009. Clyde was 56 years old at the time and is survived by two sisters who live in Arizona and New York.

Clyde migrated west from New York in the 1970's and graduated from Montana State University in Bozeman. His first jobs were in small underground mines in Virginia City, Montana, where he became an excellent mine geologist. Branching out from that experience he wound up in Hawthorne, Nevada, in the early 1980's where he ran Combined Metals Reductions exploration program for over ten years. Clyde was the face of Combined Metals in Hawthorne and was responsible for consolidating a large land package on one of the most prospective trends in Nevada, the HY, north of the Sante Fe deposit near Luning. Clyde is credited along with his Homestake partners with the discovery of the Pearl gold deposit, a blind ore body west of the Isabella, on the HY trend. Clyde became an avid windsurfer on Walker Lake and many of us share fond memories of barbeques and after dark sailing in the summertime.

Clyde moved on from Hawthorne to manage a small CMR open pit mine on the Colorado River outside of Kingman, Arizona. Following this experience and several short jobs he worked for Newmont for several years as a contract geologist and tirelessly chased drill rigs while living in Spring Creek, Nevada. Clyde returned to his roots and bought a house in Sheridan, Montana, and hit the molybdenum high by managing Gentor Resources IMA moly-tungsten project for several years. At the time of his death he was working underground at the Drumlummon mine outside of Helena, Montana.

Clyde was very exceptional at many things and was an avid rafter, spelunker, astronomer, fisherman, hunter and friend. We will all miss a very special man.

James Hunter (Jim) Bright 1927 - 2010

James Hunter Bright lost his long battle with cancer in the early hours of January 16, 2010 surrounded by his many friends and family.

Jim was born on September 15, 1927 in Webster, South Dakota to Malvida Gustofson and Edwin Hunter Bright, the second of two sons.

After the death of his father and several years of moving his mother settled in Denver, Colorado where Jim attended school until he joined the Army in 1945. Jim served in the Pacific Theater during WWII and fought throughout most of the battle of Okinawa. During his military service he was tested, found to be very intelligent, and offered an appointment to West Point. Jim left West Point to pursue his interest in geology at the Colorado School of Mines, but retained his position in the Army reserves until 1962. He graduated from the School of Mines with a degree in Geological Engineering in 1952 at the top of his class.

Jim married the love of his life, Patricia Bright, and had two daughters. His career in mineral exploration caused him and his family to travel and move many times throughout western United States and Canada. In the 1960's the family finally settled in Reno, Nevada where Jim continued to live the rest of his life.

Jim worked for many companies during his career including Anaconda, Kennecott, Noranda, Asbestos Corp., Minorex and Union Carbide. He was vice president of Canadian Reserve Inc., executive vice president of Latin Gold Inc., and president of Empresa Minera Austrobol S.A., Austoil Inc., and Nevada Mine Development Corp. He also owned and managed his own companies, Nevada Resources Inc. and Exploration Resources Inc. He was responsible for a number of significant mineral discoveries, most notably in California, Nevada and Utah. His interest in the discovery of new and often unusual resources continued until his last days.

Jim was a Registered Professional Engineer and a member of many geological professional organizations including the Society of Economic Geologists, the Society of Mining Engineers, the Geological Society of Nevada and the American Institute of Mining, Metallurgical and Petroleum Engineers (AIME). Additionally, he served on the Mackay School of Mines advisory board at UNR (board chair for two terms), and on the board of the Nevada Bureau of Mines and Geology. He published many professional reports and papers including a US Forest Service publication, "The Anatomy of a Mine". He was a member of MENSA, the most famous high IQ society in the world. Jim also received a degree in Arbitration Practice from Pepperdine University School of Law. He was appointed as Nevada's only non-attorney arbitrator by the Supreme Court of Nevada in 2001.

Jim was very proud of his Swedish heritage and enjoyed the friends he met through the Swedish Club. He was planning to visit Sweden again soon. Jim loved to travel and had the opportunity to visit, and sometimes work in, many parts of the world. In November 2007 he made a trip to India and visited the mineral properties of a friend's company.

Jim is survived by his older brother Robert Bright; former wife Patti Bright; daughter Jenni-Sue Smith and her husband Jim Smith; and daughter Marin June Bright and her husband Luc Troussieux. He has four grandchildren, Rebecca Engh and her husband Eric Engh; Kate Smith; James Smith; and Quentin Troussieux, as well as two great grandchildren, Austin and Jonathan Engh.

Please send donations on his behalf to Circle of Life Hospice in Reno (775-827-2298) which provided Jim a graceful and painless passage during his final days. There will be a memorial service on Monday, February 8, 2010 at 11 am at the First United Methodist Church in downtown Reno. Parking is available at the parking garage at First and Sierra Streets.

Thank you to our generous donors

GSN FOUNDATION

PLATINUM LEVEL DONORS \$1,000+

GOLD LEVEL DONORS \$500-\$999

SILVER LEVEL DONORS \$100-\$499

Fred Breit
Ann Carpenter
Frank K. Fenne
Dieter A. Krewedl
Bob M. McCusker
Brian Metzenheim
Sandra L. Powers
William H. Wulftange

BRONZE LEVEL DONORS \$1-\$99

Roger Bond
James K. Byars
Odin D. Christensen
Christopher Dail
Zsolt Rosta
Shea Clark Smith

STUDENT DINNER FUND

American Assay Laboratories
Keith Blair
Ann Carpenter
Melissa Mateer
Bob McCusker
Karl Frost
Richard M. Perry
Lawrence J. O'Connor
Michael J. Turner
Bill Wahl
William H. Wulftange

STUDENT FIELD TRIP FUND

American Assay Laboratories
Glenn Asch
Tyson Hasselquist
John Hoskins
Raymond (Ray) Irwin
Melissa Mateer
Brock Riedell
Bill Wahl

The GSN Endowed Scholarship Fund at the Mackay School of Earth Sciences and Engineering, College of Science, University of Nevada, Reno

Shortly after the successful completion of the first Geological Society of Nevada Symposium held in 1987, GSN officers decided to use some of the proceeds from the Symposium to establish the Mackay GSN Endowed Scholarship Fund at the University of Nevada, Reno. Since 1990 and through 2009, GSN members and the GSN Foundation have contributed \$61,000 including the initial \$15,000 to set-up the fund. The interest from the GSN Endowed Scholarship Fund is awarded annually as a scholarship to one or more undergraduate students enrolled in the Mackay School of Earth Sciences and Engineering, College of Science. The requirements are that the student maintains a 3.0 overall GPA and a 3.4 GPA in the core geoscience courses, with a preference for students who work in summer jobs that expand their experience in the geological sciences.

The scholarship awards made from the GSN Endowed Scholarship Fund have totaled nearly \$46,000 without touching the principal of the endowment, which now produces about \$5,000 per year for Mackay student scholarships. Scholarships have been awarded to 19 undergraduate geoscience students, some of whom received scholarships for more than one year.

Mackay students Raquel Minky and Sam Saunders were the recipients of GSN endowed scholarship awards for both 2008 and 2009 academic years. Raquel was a graduate of McQueen High School and is a senior in Geological Engineering, and Sam graduated from Carson High School and is also a senior in Geological Engineering. Both are active in the UNR Department of Geological Sciences and Engineering, the Mackay Muckers (the mining competition team) and other Mackay student organizations. Sam is a GSN student member who often attends GSN meetings; here is what he has to say about his recent work experiences and GSN:

"My name is Samuel Saunders and I am a geological engineering student at the University of Nevada, Reno. First and foremost, I would like to extend thanks to all who have donated to the GSN Scholarship fund. This is the second year I have received this award, and I am deeply grateful. The money almost completely funded my summer field camp, which I completed during May and June 2009. As many of you know, I have been an active member of GSN for my entire college career. For the last four years, I have attended every monthly meeting I could, as well as a couple (GSN) golf tournaments. GSN gave me more than just a scholarship, it provided a venue where I was able to meet professionals in geology and related fields. As I move on from school to a career, I will continue my membership in GSN both for networking and a place to enjoy a couple beers for years to come. I also hope I am some day in a position to give back to GSN to help future students."

The GSN Endowed Scholarship Fund is one of the best investments we all can make in the future of the geosciences – to help the next generation of geologists and geological engineers achieve their educational goals. Thanks to everyone who has contributed and thereby made these scholarships available to future geoscientists.

GSN Winnemucca Chapter Meeting February 10, 2010

“Nevada Metallogeny, Mineral Belts, and Ore Deposits: Age Is More Than Just a Number”

Marcus K. Johnston

Chief Geologist
Victoria Resources US Inc

Since gold values rebounded from recent lows of around \$250 per troy ounce in 1999 and again in 2001, escalating prices resulted in hundreds of new and old companies refocusing on gold exploration in the Great Basin. Most companies publicly present their property positions relative to known mineral belts, which are simply alignments of mineral deposits. The goal of such marketing, of course, is to establish project credibility by demonstrating its strategic location relative to one or more of the belts, boosting investor confidence through association. The most widely accepted belts in Nevada are the Carlin, Battle Mountain-Eureka, Getchell, and Independence gold belts, which are commonly, but incorrectly, referred to as ‘trends.’ A brief tour through the multitude of websites for companies exploring in Nevada typically show the locations of many exploration properties within these belts, along with numerous other previously and newly defined belts.

The aim of this talk is neither to approve nor negate any of the proposed gold belts, but to present the spatial and temporal distribution of various deposit types in Nevada based solely on empirical data. Hypogene precious and base-metal deposits in the Great Basin can generally be grouped into six eons/periods/epochs of activity, each associated with different styles of mineralization: 1) small platinum-palladium occurrences related to Proterozoic basement rocks, 2) porphyry-related base-metal deposits formed in the Jurassic, 3) porphyry-related base-metal deposits formed in the Cretaceous, 4) metamorphic gold-quartz-etc. deposits also formed in the Cretaceous, 5) temporally related gold-copper±molybdenum porphyry and/or skarn deposits, polymetallic-vein, and Carlin-like/Carlin-type deposits formed in the late Eocene, and 6) widely distributed high- and low-sulfidation gold and/or silver deposits formed in the Late Eocene through Pliocene.

Plotting temporally related deposits and igneous activity for the six groups does not define any spatially finite ‘belts’ for the platinum-palladium or Mesozoic base-metal systems, at least at the state-scale, but there are clear, spatially limited distributions for the Cretaceous metamorphic gold-quartz veins, and Late Eocene (Bartonian Age) to Early Miocene (Burdigalian Age) deposits. This range for Cenozoic deposits is bounded by important shifts in the tectonic forces affecting the region, beginning with a major change in the direction of movement of the Pacific plate around 43 Ma, and culminating with continental rifting and emergence of the Yellowstone Hot Spot in Northern Nevada around 17 Ma. Epithermal deposits formed after around 14 Ma, including the Comstock Lode, Bullfrog, and Hycroft, do not show consistent spatial patterns, which may indicate some other change in the tectonic regime, or may be a function of erosion levels, lack of age data, etc.

The spatial and temporal distributions of deposits from the six major groups are used to define the metallogenic provinces in Nevada, which commonly overlap in space. Cretaceous metamorphic gold-quartz deposits, and the Late Eocene through Early Miocene deposits can be grouped into belts that are not only temporally related, but structurally related, as well. The same can be said for many epithermal deposits formed between 17 and 14 Ma. Not surprisingly, the Carlin and Battle Mountain-Eureka belts are part of these temporally and structurally related systems, which enhances the prospectivity of regions between known deposits along these belts, especially under post-mineral cover. It will be left to attendees to decide which other proposed belts warrant additional consideration, and which exist only in the minds of the geologist(s) who originally defined them. Hopefully, the talk will conclude with a lively bit of discussion, as this new era of exploration will require new ideas, which are typically shaped by input from many individuals.

WINNEMUCCA CHAPTER FEBRUARY SPONSOR



1645 North 500 West
Mapleton, UT 84664

Steve Bills
General Manager

Cell: 801.310.1628
Office: 801.446.2400
FAX: 801.446.3940

Email: steve@tonatec.com
www.tonatec.com

**Thanks to ITASCA Denver, Inc. for
sponsoring the Winnemucca Chapter's
January Meeting**

**Thanks to Geotemps, Inc. for sponsoring
the Elko Chapter's
January Meeting**

**GSN Elko Chapter Meeting
February 18, 2010**

**“Staring at the Bark on the Trees in the Forest:
Structural Misinterpretations Caused by Misunderstanding the Scale and
Genetic Hierarchy of Deformational Features in Elko County, Nevada”**

Dave Schwarz, PhD, PG,
Boise, ID

For north-central to northeastern Nevada, the structural style and Paleozoic through Mesozoic tectonic evolution remains controversial. Within Elko County, many thrust faults previously mapped or inferred were one of two confusing variations on a central theme of post-Paleozoic contractional deformation that eliminates the need for a Paleozoic Antler orogeny (Ketner, 1998). Variation 1 consists of Mesozoic juxtapositioning of many structural plates interpreted from field relationships primarily in the HD Range, Windermere Hills, and Snake Mountains. Variation 2 consists of multiple Mesozoic to Eocene folding and thrusting events of many structural plates in the Pinon Range, Adobe Range, Peko Hills, and Elko Hills. Both of these variations are poorly supported by exposed field relationships or subsurface data from petroleum wells in the area. Instead, I interpret post-Antler crustal shortening as compensated primarily by megascopic folds in which emergent thrust faults are a subordinate tectonic element. In this region, thrust faults exclusive of the Roberts Mountains thrust fault do not exhibit large displacement; they consist of mesoscopic flexural-slip reverse faults and thrust faults generated by megascopic fault-cored folds. I interpret the younger-on-older “thrust faults” as depositional contacts and flexural-slip faults. Many faults have been misinterpreted based on one or more of the following four errors: (1) outdated facies interpretations which used thrust faults to account for the close proximity of differing facies; (2) mapping younger-on-older stratigraphic relations as thrust faults that often exhibit problematical geometries; (3) lack of paleontological control at critical exposures; and the focus of this talk: (4) misunderstanding the scale and genetic hierarchy of deformational features.

I interpret the locations of megascopic folds such as the Adobe Range syncline to be controlled by the inherited structural and stratigraphic template (Schwarz, 1994). This is similar to Muntean et al (2007) who used inversion tectonics to explain the formation of reactivated megascopic Paleozoic normal faults that may control the linear trends of Carlin-type gold deposits. Tectonic Inversion is a thick-skinned style of deformation which greatly contrasts with most previous interpretations of northeastern and east-central Nevada contractional structures that invoked thin-skinned deformation models based on a layer-cake stratigraphy. For example, the supposedly thin-skinned central Nevada Thrust Belt consists of reverse faults (35 – 65 degree dips) with east and west vergence, a few miles of shortening, and interpreted large magnitude stratigraphic separation across each fault. This structural style is consistent with thick-skinned inversion tectonics, where thrust and reverse faults are “conditioned” by the basement blocks rather than being the result of a distant push as in thin-skinned tectonics. The geometries of mega-structures generated by inversion tectonics are controlled by the type and orientation of normal faults formed during rifting, and stratigraphic thickness variations created by synorogenic deposition on, and erosion off of propagating faults and folds. The most common type of inversion is a reverse fault along an earlier-formed normal fault. In Nevada, these inversion fault geometries then set the stage for a final reactivation and complication as Cenozoic normal faults.

I will review the interesting fault geometries created by inversion tectonics, and then focus on the mega-folds in the region, and attempt to show how they may be useful tools to identify the fold propagating mega-faults that may be important controls for gold mineralization. In addition, I will discuss how other workers have failed to understand the scale of the features that they analyzed. They have interpreted mesoscopic structures (the “bark”) to invoke orogen-scale deformation (the “forest”) without realizing they were staring at the trees. Field relationships will be discussed for Carlin Canyon, northern Adobe Range, Peko Hills, Elko Hills, Snake Mountains, HD Range, and Windermere Hills. The deformational style in Nevada will be compared to other less complicated regions such as the High Atlas Mountains of Morocco and the Zagros Fold Belt of Iran and northern Iraq.

Just A Reminder 

GSN 2010 Symposium

Register Now, Tell Your Friends!!!

Upcoming Events

Feb. 2 Tuesday AAPG Distinguished Lecturer Bruce Hart will be giving a talk entitled "Reservoir-Scale Seismic Stratigraphy: A Call to Integration" (see attachment for abstract and short bio).

The talk will take place on Tuesday February 2nd, 2010 at 5:30 pm in LME-316 on the UNR campus.

Feb. 8 Monday Northern Nevada Section SME monthly dinner meeting:

Speaker: Brandon Short, Senior Long Range Planning Engineer, Barrick Goldstrike UG Division, his talk is titled "**Mine Planning at Barrick Goldstrike Underground**" see abstract on page 10

Email neville.rhoden@gmail.com for reservation.

Location: Circus-Circus (Mandalay Room in the Convention)

Social Hour begins at 6:00PM

Dinner starts at 6.45PM

Technical Talk begins at 7:30 PM.

Members \$22

Non Members \$25

Feb. 19 Friday **GSN Board of Directors Meeting**

Location: 2175 Raggio Parkway, Reno, Nevada (Upstairs conference room)

NBMG's Great Basin Science Sample & Records Library at the Desert Research Institute

Time: 1:00 PM to 3:30 PM

ACTIVITY UPDATE

Mike Brady, November 2009

Nevada

www.activityupdate.com

Great Basin Gold Ltd. announced that recent drill results at the Hollister Project include 0.8 meters @ 11.732 opt Au, 111.98 opt Ag (HSD-84); 1.4 meters @ 63.174 opt Au, 155.23 opt Ag (HSD-85) and 1.3 meters @ 26.068 opt Au, 235.83 opt Ag (HSD-86). (resource = 1,111,000 tons @ 1.172 opt Au, 8.63 opt Ag measured+indicated) *M.J.*: October 30

International Minerals Corp. announced that it offered to acquire Metallic Ventures Gold Inc. for \$24,000,000 and 8,500,000 shares. (resource @ Converse = 262,350,000 tons @ 0.015 opt Au measured+indicated) *Press Release*: November 2

Western Lithium Corp. announced that it terminated its offer to acquire Rocky Mountain Resources Inc. (resource @ Gibellini = ?) *N.M.*: November 16

Rye Patch Gold Corp. announced that recent drill results at the Lincoln Hill Project include 18.3-45.7 meters @ 0.021 opt Au, 1.31 opt Ag (LR-026); 21.3-25.9 meters @ 0.012 opt Au, 0.70 opt Ag (LR-027); 4.6-7.6 meters @ 0.011 opt Au, 0.12 opt Ag (LR-028) and 97.5-105.2 meters @ 0.023 opt Au, 0.34 opt Ag (LR-029). *Press Release*: November 13

Rye Patch Gold Corp. announced that it acquired an option to purchase a 64% interest in the REN Property from Centerra Gold (US) Inc. for \$42,000,000 in cash and shares. (resource = 3,290,000 tons @ 0.372 opt Au measured+indicated and 918,000 tons @ 0.472 opt Au inferred) *Press Release*: November 18

New Dimension Resources Ltd.(30%) announced that recent drill results at the Reese River Project include 44.2-50.3 meters @

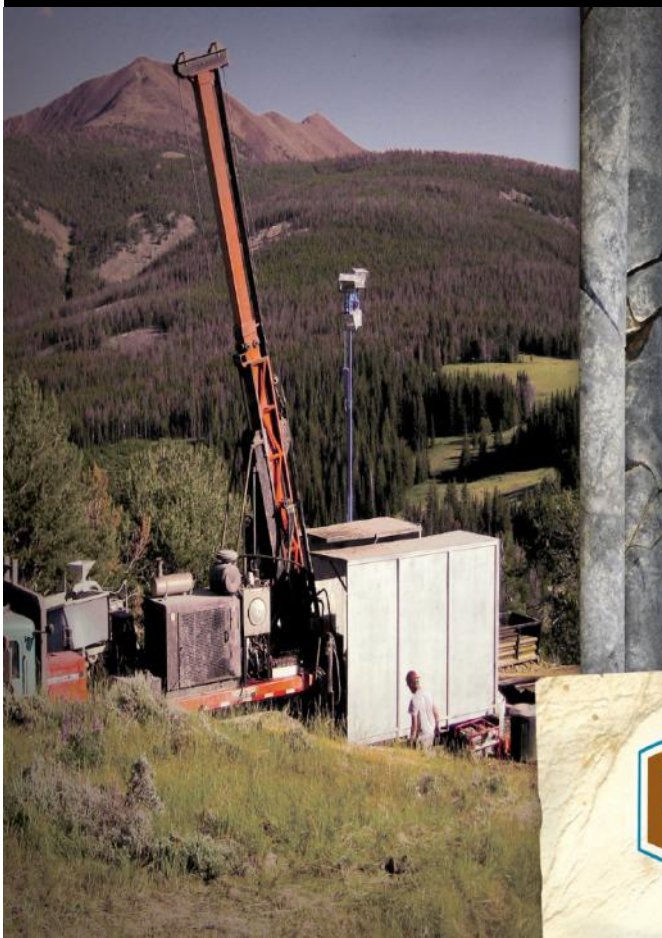
0.44 opt Ag (RR-1); 48.8-62.5 meters @ 0.16 opt Ag (RR-5); 42.7-85.4 meters @ 0.13 opt Ag (RR-6 and 38-51.7 meters @ 0.05 opt Ag (RR-7). *Press Release*: November 2

Midway Gold Corp. announced that based on recent drill results at the Pan Project, resources aggregate 34,650,000 tons @ 0.018 opt Au measured+indicated and 1,600,000 tons @ 0.017 opt Au inferred. (was 18,960,000 tons @ 0.019 opt Au measured+indicated and 8,300,000 tons @ 0.017 opt Au inferred) *Press Release*: November 5

Klondex Mines Ltd. announced that recent drill results at the Fire Creek Project include 885-945 feet @ 0.124 opt Au, 0.31 opt Ag (FC09-01); 1,035-1,055 feet @ 0.055 opt Au, 0.09 opt Ag (FC09-02); 915-943.2 feet @ 0.730 opt Au, 0.47 opt Ag (FC09-03) and 727.8-745 feet @ 0.312 opt Au, 0.57 opt Ag (FC09-04). (resource = 5,547,000 tons @ 0.296 opt Au indicated) *Press Release*: November 18

Canada Lithium Corp. announced that it terminated its interest in the Nevada Brines Project with Gold Summit Corp. *Press Release*: November 5

AuEx Ventures Inc.(49%) announced that recent drill results at the West Pequop Project include 1.0-10.0 feet @ 0.023 opt Au (WNC150); 965-980 feet @ 0.038 opt Au (WN151); 376-383 feet @ 0.022 opt Au (WNC154) and 620-630 feet @ 0.031 opt Au (WN158). *Press Release*: November 17



A CORE DIFFERENCE

- Support for active mine operations and mine development projects.
- Underground and surface drilling capabilities.
- Maximum returns on client investments
- Uncompromised safety and stewardship.
- Unparalleled customer service



Coeur d'Alene, Idaho – 208.665.7211
Elko, Nevada – 775.777.1100

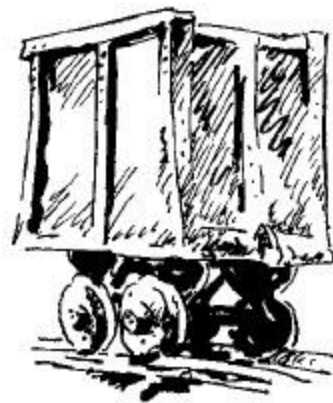
www.timberline-drilling.com

Northern Nevada Section SME

February 8, 2010

Speaker: Brandon Short, Senior Long Range Planning Engineer, Barrick Goldstrike UG Division, his talk is titled "***Mine Planning at Barrick Goldstrike Underground***"

Abstract - The Goldstrike Underground Mine, located adjacent to the Betze Post Open Pit in Northeast Nevada, is the largest underground gold mine in North America. The mine utilizes a combination of longhole stoping and drift and fill mining methods to extract approximately 4,200 tons of ore and waste per day. The material is either hoisted to surface through the Meikle production shaft or hauled to the open pit through a portal. The underground division utilizes an integrated planning system utilizing Vulcan three dimensional mine design software, a Microsoft Access database and EPS mine scheduling software to provide unified mining plans to the underground operations. The planning system brings together the rolling three month plan, six month plan, annual budget and life of mine plan into a unified strategy. This ensures that the eight mining zones spread along a strike length of over two miles are working towards a common goal. Goldstrike's underground mine planning systems have evolved significantly and now provide uniform direction to meet the mining objectives.



North American Exploration

Providing service to the Mining industry since 1964



With over 45 years of experience, we will complete any exploration project, Anytime! Anywhere!



801-544-3421

North American Exploration, Inc.
447 North 300 West, Suite #3
Kaysville, Utah 84037
Email: nae@nae-xploration.com

ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES



ALS Minerals



The world's leading supplier of analytical and assay services for the exploration and mining industries.

We provide analysis for:

- Gold & Other Precious Metals
- Base Metals & Pathfinder Element Suites
- Uranium Exploration
- Concentrates & Industrial Minerals
- Acid Generation Potential
- Isotopes

Rapid Core Stop:

- Core Log & Cutting

Mineralogy Services

U.S.A. Locations

- Reno, NV (775 356 5395)
- Elko, NV (775 738 2054)
- Winnemucca, NV (775 625 4192)
- Fairbanks, AK (907 452 2188)

54 locations in 26 countries

Contact us to find out how we can save you time and allow you to use your data with greater confidence.

www.alsglobal.com

*Right solutions....
....Right partner*



At Timberline Drilling, Inc. we have a fleet of drills to meet every need. We specialize in both underground and surface core drilling in support of active mining operations, mine development projects and exploration.

Timberline Drilling, Inc. - Corporate
Martin Lanphere: 208.755.1938
mlanphere@timberline-drilling.com

Timberline Drilling, Inc. - Mexico Operations
Paul Elloway: 52.662.151.0426
pelloway@wwemexico.net

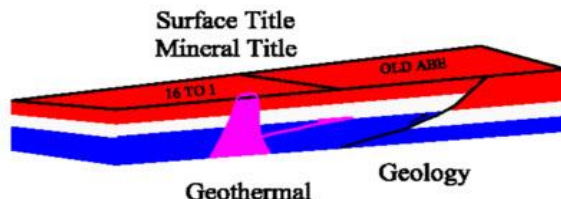
Timberline Resources Corp.
Randy Hardy: 208.664.4859
hardy@timberline-resources.com

Visit Us At:
www.timberline-drilling.com
for detailed information on all of our available drill rigs.

G.I.S. Land Services

Greg Ekins M.S. R.P.L. #32306 President
Mineral Landman - Commissioned Abstractor
"From Courthouse Records to Final Map"

Mineral Title, Geothermal Title,
National Instrument (NI) 43-101 Title Review,
Due Diligence
3D AutoCad; ArcMap and MapInfo GIS



A professional firm of
Landmen, Geologists, Draftsmen and Technicians
Providing Abstracts of Title, Land Status and
Exploration Geology Services
Utilizing AutoCad - ArcMap - MapInfo - PowerPoint
www.gislandservices.com

241 Ridge St., Suite 250
Reno, NV 89501
Ph: 775-746-8803 Fax: 775-746-8802
email: greg@gislandservices.com

Exploration & Mining Analytical Services



INSPECTORATE

INSPECTORATE AMERICA CORP.

605 BOXINGTON WAY, SUITE 101
SPARKS, NV 89434-8929

Phone: 775.359.6311 * Fax: 775.359.2944

<http://www.inspectorate.com>

Carmen Arbizu-Business Development Mgr

Carmen.Arbizo@Inspectorate.com

Mobile: 775.219.8657

Richard Thorneloe-General Mgr

Richard.Thorneloe@Inspectorate.com

Mobile: 775.741.0015

Dave Williams-Vice President

Dave.Williams@Inspectorate.com

Mobile: 775.848.8025

Chuck Whipple-Quality Assurance/Client Service Mgr

Chuck.Whipple@Inspectorate.com

Mobile: 775.830.4242

Brian Park-Li-Technical Manager

Brian.ParkLi@Inspectorate.com

Mobile: 775.691.5834

**MINIMIZING RISK EVERY DAY
ISO 9001:2000 Certificate #30406**



*Jo Beth Allen
Professional Graphics*

*CAD Drafting/Geologic Data Maps
Digitizing/Presentation Graphics
PowerPoint/Plotting/Printing
Geologist*

1055 Joshua Drive
Reno, Nevada 89509

Phone: 775-324-7960

Fax: 775-324-7583

jobeth@yellowsub.net



Fire Assay, ICP-OES/MS,
XRF, LECO, Custom Prep,

Chris Ioannakis, Managing Director, Analytical Services

Corporate Office

1500 Glendale Avenue
Sparks, NV USA 89431-5902
Telephone: (775) 356-0606
Fax: (775) 356-1413

Elko Office

2320 Last Chance Road
Elko, NV USA 89801-4852
Telephone/Fax : (775) 738-9100

E-mail: AALADMIN@aallabs.com

Big Sky Geophysics

Clark Jorgensen, M.Sc.
Geophysicist

*Field Work
Processing
Interpretations*

P.O. Box 353
Bozeman, Montana 59771
USA

Phone/Fax +1 (406) 587-6330
Mobile +1 (406) 580-9718
clark@bigskygeo.com

**For more details, my background, and case studies,
visit my webpage at www.bigskygeo.com**



**Leaders in Deep
Exploration**

Global Geophysical Services

Surveys: IP/Resistivity,
EM, Gravity, MT, TEM, CSAMT,
Magnetics

Consulting: 2D & 3D Inversion,
Project Design, Modelling

Deep Earth Imaging Technology



Minesite Imaging: Exploration,
Delineation, Condemnation

www.QuantecGeoscience.com 1.775.827.2611

Canada • USA • Botswana • Peru • Chile • Argentina • Australia



**Carlin Trend Mining
Supplies & Service**

www.carlintrend.com

369 5th St., Elko, NV 89801
(775) 778-0668, Fax: (775) 778-0687, carlintrend@frontiernet.net

Geological Consulting - Claim Staking - Soil Sampling
Geology & Drafting Supplies - AutoCad & GIS
Temporary Employees In All Fields



**ENVIRONMENTAL SERVICES
FOR THE MINING INDUSTRY**

environmental consultants, inc.

- Baseline Studies
- Environmental Permitting
- Monitoring & Compliance
- Reclamation & Closure Plans
- Investigation & Remediation

**Elko Location
775-738-8766**

www.jbrenv.com Reno and Salt Lake City locations



A subsidiary of:



www.orbitgarant.com

RC Drilling, Core Drilling Surface & Underground
Contractors License # 59509

6120 Pedroli Lane
Winnemucca N.V. 89445

Tel 403-652-5530
Fax 403-652-5578

Email infodriftdrilling@platinum.ca



DIVERSIFIED DRILLING, LLC



*Providing Drilling Services To The
Mining/Metals Industry Since 1980*

3650 Grant Creek Road
Missoula, Montana 59808

Phone: (406) 542-1010 Fax: (406) 542-5065
www.diversifieddrilling.com

HARD ROCK WHEELS, INC.

4WD Pickup Rentals

Howard J. Adams
14756 Pine Knolls Lane
Reno, Nevada 89521
(775) 852-2622
Fax (775) 852-2075

Taiga Ventures
2700 S. Cushman St.
Fairbanks, Alaska 99701
(907) 452-6631

hardrockwheels@yahoo.com



Sierra Environmental Monitoring
Analytical Testing Services

Water
Wastewater
Brines

Hazardous Waste (RCRA)
Mining Industry
Specialized Testing

Email: jnava@sem-analytical.com
Tel: 775-857-2400

Website: sem-analytical.com

PRO 1

Automotive

"Discover the Personalized Touch in Automotive Repair"

**All Repairs come with
a Nationwide Warranty!**

DMV Registration Renewals

Free Pick-Up & Delivery...Call for Details!



**COMPLETE
AUTO REPAIR**

FOREIGN & DOMESTIC

AUTOS • TRUCKS • 4-WHEEL DRIVES • GAS & DIESEL

**945 TERMINAL WAY, RENO 89502
OFF MILL STREET**

775-856-4434

www.pro1automotive.com

WE PROUDLY SUPPORT NEVADA MINING!
*Ricky Stebbins has been taking care of geologists
vehicles since 1986 & understands the need for
reliable vehicles on the road and in the field.*

GEOLOGICAL SOCIETY OF NEVADA



gsn@gsnv.org • www.gsnv.org
Telephone (775) 323-3500 Fax (775) 323-3599
2175 Raggio Parkway, Room 107
Reno, NV 89512
USA

*GSN 2010 Symposium
Sign up now before your
favorite field trip or
short course is full!*