

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



January 2010, Vol. 25, No. 1

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

- Jan. 13 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. Beverage sponsor for the evening will be Itasca Denver, Inc. Speaker for the evening will be Sandy Hodge, Senior Hydrogeologist, Itasca Denver, Inc. Her talk will be titled "**Dewatering and Subsidence at the Lone Tree Mine: Analysis by Groundwater Modeling**". (see abstract on page 6). For more information contact Matt Hoffer at (775) 635-4756.
- Jan. 21 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 to be announced. The sponsor for the evening to be announced. For more information contact Jim Essman at (775) 778-4374.
- Jan. 15 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 The Harris Drilling Companies (Patrick Harris). Speaker for the evening will be Sean McCann, Chief Geologist - Leeville Mine, Newmont Mining Corporation. His talk will be titled "**Technology and Innovation in Geology**". Dinner reservations must be made by 1:00 PM Wednesday, January 13th. Contact Kathy Sestanovich at (775) 323-3500 or e-mail gsn@gsnv.org for reservations.
- Jan 28 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*

160 Years Ago

Charles Greenhaw, a western historian and emeritus dean at Great Basin College, warmly addressed a capacity crowd at Reno GSN's Christmas party. Dr. Greenhaw's subject was the plight of the 49ers, who dared venture the roughly 2,000 miles from the stepping-off point of St. Joseph on the Missouri River across the western frontier in wagons and on foot to their final destinations among the many mining camps of California's Mother Lode. The number of emigrants who utilized the Gold Rush Trail through Nevada from 1849 through 1850 is estimated at 69,000. Such faith and fortitude we could use more of today. The sights, events, and drama of their adventures, from mundane to extraordinary, were captured explicitly in the diaries and drawings of J. Goldsborough Bruff, the leader of the Washington City Company's party. No other set of documents so thoroughly records the virgin scenes that unfolded before the eyes of these

GSN JANUARY MEETING SPONSOR

THE HARRIS DRILLING COMPANIES

Exploration Drilling SINCE 1956

Patrick Harris

www.harrisexploration.com

C# 760.822.7886 O# 760.741.8890 email: rotaryman@cox.net

(Continued on page 2)

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

(Continued from page 1)

early explorers. Bruff was an amateur artist and a surveyor, and more important than the artistic accuracy of his drawings are his copious notes. His pen never sat idle as he tirelessly scribbled in words and pictures, documenting the chapters of this Wonderland that so captivated its new and unknowing audience. The first three quarters of the journey west coaxed many an emigrant into a false sense of comfort and ease, passing through the relatively benign and endless horizon that are the plains of Nebraska and Wyoming. The trip got harder by the mile, though, and the sections through Nevada following the Humboldt River must have seemed a cruel joke to many who had gone so far only to face the parched earth of the Humboldt Sink before scaling the fortress that is the Sierra Nevada as winter approached. Few emigrants along the Gold Rush Trail had anything good to say about the Nevada segment. Gold Rusher James Evans wrote of the Humboldt:

"Perhaps the Devil himself having cast his eyes over the world concluded to try his hand at making a river. He made it in the night and laid it down so crooked and ragged, that just at break of day when he stopped to look back at it, he got ashamed of himself and ran it into the ground." And on first seeing the Basin and Range from Granite Pass in the Goose Creek Range, 49er Alonzo Delano commented on the landscape before him: "It had evidently been the scene of some violent commotion, appearing as if there had been a breaking up of the world."

The scenes that Bruff portrays in his writings and drawings from 1850 are familiar to Nevada geologists and frequent flyers along I-80 alike, and each has a geologic story underlying its human ones. Bruff's scenes include Thousand Springs Valley north of Wells, the East Humboldts and Rubies, Elko Hot Springs, Carlin Canyon, Palisades, Emigrant Pass, the Humboldt at Beowawe, tilted strata of Shoshone Mesa (now, Argenta), Battle Mountain, Iron Point and Golconda, the volcanic pinnacles of the northern Sonoma Range, Button Point, the Hot Springs Range, Blue Mountain, Humboldt House, and Lassen Meadows (now, Rye Patch), among others. These points represented stops along the way, cairns that marked the trace of the Gold Rush Trail, large segments of which later became the obvious routes for the Central Pacific Rail, Victory Highway, Highway 40, and finally, I-80.

A good trail is one that stands the test of time, that is, geologic time. There is a geologic basis for a flat ribbon of land that cuts the structural grain in a mountainous terrain. Despite its rugged surroundings, the Humboldt rarely seems in a hurry. Why should it? Its fate as vapor rising from the shimmering salt flats seems somehow disappointing. The Humboldt has a gentle gradient for a western stream, dropping a little more than 1,500 feet over 350 miles from its headwaters north of Wells to its final resting place in the Humboldt Sink. It is an old stream amid a youthful landscape. Alan Wallace's recent work on the Tertiary sub-basins within the Humboldt River drainage suggests today's Humboldt mimics the mid-Miocene Humboldt, the modern stream successfully incising

its ancestral deposits in response to a lowering of its base level due to down-dropping to the west. For the forty-niners, the Humboldt's success at exhumation meant a flat, dusty course and poor water, which was drinkable only when you really needed it. Its westward course was the only obvious one amid a maze of road blocks: steep and dry, north-trending ranges and deep, narrow valleys. Jim Faulds and others, studying the swath of geothermal activity in the Humboldt drainage, attribute unusually high heat flow to transfer of dextral strain from the northern terminus of the Walker Lane to a broad zone of WNW extension along their Humboldt structural zone. Without doubt, high heat flow and extensional tectonism contributed to the formation of many young (<6 Ma) Au-Ag deposits within the Humboldt corridor. Even more intriguing is the relationship, if any, of the corridor to the decidedly older Carlin-type gold deposit camps of north-central Nevada, which also cluster suspiciously near the mighty Humboldt. The 49ers, eager to get to established camps in the Mother Lode walked over a goldfield of similar proportions, but so obscure were its deposits that it would take over 100 years to fully appreciate and exploit its resources.

As winter takes hold of northern Nevada and field work dwindles to a Humboldt trickle, I recommend Keith Meldahl's book called, "Hard Road West." Meldahl does a good job of weaving geologic history in with emigrant history over the entire Gold Rush Trail, and several of its later chapters cover the trail's segments in northern Nevada and along the Humboldt River, of course, using Bruff's drawings as a foundation.

From long ago, to back to the future, January's Reno GSN talk will be on Innovations in Geology: Digital Mapping, Logging, and Data Management by Sean McCann of Newmont Mining Corporation. Sean is a managing geologist at the Leeville Mine on the Carlin Trend, where safety concerns in the underground mine spawned a new set of tactics in acquiring basic geologic information. Please join us on January 15th for Sean's talk.

GSN heads into 2010 a healthy and active organization. We have a new office and warehouse thanks to NBMG. We are 1,000 members strong, including over 100 students. We are gearing up for our 7th symposium, in May, which will focus on the geography we know best – the Great Basin. We look forward to your continued support of the symposium, including many opportunities for volunteers. Thanks to you, the GSN Foundation is also doing well and continues to generously support students through scholarships and K-12 activities. 2009 has been a good year for GSN, and it's our goal that 2010 be even better.

Best wishes for a healthy and prosperous New Year,

Mike

***Thanks to Agnico-Eagle (USA) Limited for hosting
The Reno GSN December Meeting***

GSN January 15, 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, January 13, 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>

Technology and Innovation in Geology

Sean McCann

Chief Geologist –Leeville Mine
Newmont Mining Corporation

Technology is a word that elicits varied responses from those who hear it. The stereotypical geologist is thought to fear technology more than the notion of evolution being disproved. However, this talk will display that innovation and technology serve a role in our business whether that be new discovery or the latest mining application. Over the past two decades we have witnessed remarkable advancements in the tools that enable us to perform our jobs. Claim staking, prospecting, mapping, geophysics, geochemistry, and ore control are all fundamental aspects of our profession that continue to change due to innovation. Embracing technology is a required element for us to stay a step ahead of our competition and to be successful in our future endeavors.

Brief Biography

Sean has worked in the mining business for Newmont since 1987 as a freshman intern. His business card has changed only due to M&A's (Noranda to Hemlo, to Battle Mountain Gold to Newmont). The first 15 years of his career were spent in Ontario, Canada, exploring for gold in Archean greenstone belts. Over the past years he has learned to become chief geologist at the Leeville underground mine. Obviously, Sean is a champion of utilizing new technologies.





GSN 2010 SYMPOSIUM, MAY 14-22
 John Ascuaga's Nugget, Reno/Sparks, Nevada

**ONLINE REGISTRATION WILL BE AVAILABLE
 MID-JANUARY 2010**

Technical Sessions:

- Carlin-Type Deposits I and II
 - Great Basin Metallogeny
 - Nevada Geology and Tectonics
 - Discovery Case Histories
 - New Mine Developments
 - Volcanic-Hosted Epithermal Deposits
 - Young Au-Ag Hydrothermal Systems
- Styles of Tertiary Magmatism and Metallogeny
 - Exploration Geophysics
 - Intrusion-Related Deposits
 - Geothermal
 - Rumors from the Bush—Great Basin Exploration Update
 - Outta the Box—Concepts in Great Basin Geology and Ore Deposits
 - Exploration Remote Sensing
 - Regional Exploration Roundup
 - World Exploration
 - Exploration Success—Americas

Co-Hosts:



Contact us:
(775) 846-9766

Field Trips:

- CARLIN GOLD DEPOSITS—3 TRIPS
- EPITHERMAL DEPOSITS—2 TRIPS
- PORPHYRY AND IOCG DEPOSITS
- MODERN AND ANCIENT GEOTHERMAL SYSTEMS
- INDUSTRIAL MINERAL DEPOSITS

Short Courses:

- SEG WORKSHOP—GOLD IN 2010—
- STRUCTURAL SYSTEMATICS
- FUNDAMENTALS OF NI 43-101
- MOLYBDENUM DEPOSITS
- ARCGIS
- REMOTE SENSING AND SPECTRAL ANALYSIS
- ISOTOPES AND EXPLORATION
- MOLYBDENUM IN THE NEW MILLENNIA
- FORMATION OF GOLD PROVINCES
- ROCKFALL HAZARDS AND MITIGATION

secretary@gsnv.org

www.gsnv.org/symposium

Thank you to our generous donors

GSN FOUNDATION

PLATINUM LEVEL DONERS \$1,000+

GOLD LEVEL DONORS \$500-\$999

Dennis Fenwick
Charles Weakly

SILVER LEVEL DONORS \$100-\$499

Graeme Davis
Howard Shafer
Roger C. Steininger

BRONZE LEVEL DONORS \$1-\$99

Seth Ames
Steve Barnwell
Keith Bettles
Jeffrey Blackmon
Rachel Burgess
Steven Carroll
W. T. Cohan
Rachel Dolbier
Tony Eng
Erik Haroldson
Richard A. Harris
Tim Jefferson
Bert W. Jeffries
Joseph Anthony Kizis, Jr.
Dieter A. Krewedl
Robert O. Laidlaw
Robert H. Lambeth
Walter Lienhard
Chester E. Nichols
John Norby
Juan Ruiz Parraga
Jose S. Portacio, Jr.
Ken Puchlik
Paul Renkin
Jason Rizzolo
Howard Shafer
Mary Stollenwerk
Charles P. Watson
Thomas N. Westervelt

STUDENT DINNER FUND

Mark J. Abrams
Ken Bettles
Tom Cordova
Ken Cunningham
David C. Fitch
Steve Garwin
Lew Gustafson
Patrick Harris
Rich Harris
Chris Henry
Dieter A. Krewedl
Robert H. Lambeth
Alan Lander
Juan Ruiz Parraga
Richard Perry
Ken Puchlik
Paul Renken
Larie Richardson
John Schaff
Roger C. Steininger
Mary Stollenwerk
Donald A. Wagstaff
Charles Weakly
Terry White

STUDENT FIELD TRIP FUND

Scott A. Craig
Rich Harris
Robert H. Lambeth
Alan Lander
Gary Nordin
Duane Poliquin
Richard R. Redfern
Mary Stollenwerk
Donald A. Wagstaff
Charles Weakly
Steven I. Weiss

***Thank You To Our
Generous GSN Members!***

GSN Winnemucca Chapter Meeting January 13, 2010

“Dewatering and Subsidence at the Lone Tree Mine: Analysis by Groundwater Modeling”

Sandra J. Hodges
Senior Hydrogeologist
ITASCA, Denver, Inc.

The Lone Tree mine is located about five miles west of Valmy, Nevada. Dewatering began at the Lone Tree mine during late 1991 and continued until December 2006. Water levels within the pit were lowered about 890 feet by the end of mining. A groundwater model supported the Environmental Impact Statement (EIS) and has been regularly updated since that time. Groundwater modeling has been key to the understanding of the hydrogeology of the mine and surrounding area. Bedrock of the area has been modeled using a horizontal hydraulic conductivity of up to 100 feet/day. Alluvium in the valleys reaches depths of over 2,500 feet and is a complex mix of fine-grained lacustrine, volcanic and distal fan sediments. With the exception of proximal fan sediments on the mountain flanks, the alluvium is observed to have a very low hydraulic conductivity.

Subsidence due to dewatering has been observed as cracks on the land surface and has been measured by surveying and data interpretation techniques using Interferometric Synthetic Aperture Radar (InSAR), a recently developed remote sensing technology. The area of subsidence appears to match the measured/model predicted area of groundwater drawdown in the bedrock. Because of the shallow completion depths, very little, if any, drawdown has been measured in the alluvium except in very deep alluvial piezometers. The amount of subsidence seems to be related to the thickness of the alluvium and the amount of drawdown measured in the bedrock. It is hypothesized that the lower layers of the alluvial sequence, that are in contact with the underlying depressurized bedrock, have had reductions in head in an area that mimics the bedrock drawdown pattern.

Groundwater modeling indicated the presence of a structure to the west that acted as a leaky barrier to groundwater flow within the bedrock. InSAR data interpretations show a distinct structure limiting the amount of subsidence, and by inference, the structure acts as a barrier to groundwater flow within the bedrock. InSAR interpretations also helped refine specific storage values used in the groundwater model.

In areas with changes to groundwater levels, such as where mine dewatering is occurring, InSAR data interpretations of subsidence may be an appropriate tool to use in determining appropriate locations for an expanded groundwater monitoring network, or to indicate that the current monitoring network is adequate.

The current groundwater model is well calibrated and predicted water-level recovery in the pit lake and surrounding areas matches measured field data.

WINNEMUCCA CHAPTER JANUARY BEVERAGE SPONSOR



Sandra J. Hodge
Senior Hydrogeologist

Hydrogeology, Geochemistry,
and Geomechanics

143 Union Blvd., Suite 525
Lakewood, Colorado 80228
United States
T (303) 969-8033
F (303) 969-8357
shodge@itascadenver.com

www.itascadenver.com

***Thanks to Connors Drilling for sponsoring
the Winnemucca Chapter's
November Meeting***

SUPPORT FOR THE GSN FOUNDATION AT THE CHRISTMAS MEETING

Thank you again for supporting the GSN Foundation through the annual Christmas membership meeting auction and raffle which raised \$10,123 to support our activities. To all of you who supplied auction and raffle items know that you are greatly appreciated. It would be impossible to hold the fund raiser without your contributions. Special thanks go to Scott Werschky for supplying the Round Mountain gold specimen, and Mark Stock and Neil Prenn for the numerous mineral specimens. Of course thank you to all that bought raffle tickets and bid on the several auction items. Finally, D.D. Lapointe, Rachel Dolbier, and Ruth Buffa you are the best for organizing the event.

Roger Steininger
Chair & Executive Director

The GSN Foundation would like to sincerely thank the following donors to our 2009 Raffle and Silent Auction:

Opal Adams and Rich DeLong, Enviroscientists, Inc
Agnico-Eagle Inc.
Ric Allison, A & A Equipment
Tom Anderson
Greg Arehart
Liz Ball & Leslie Rumph, Mackay
Steve Barnwell, Boart Longyear
Melissa Bell, College of Science, UNR
Ruth Buffa, US Gold Inc.
Tom Callicrate and April Barber
Mac Canby
Ruth Carraher & Paul Muto
Steve Carroll, Schlumberger Water Services
Alan Coyner, NDOM
Kim Craig, Barrick Gold
Tim Crowley, Nevada Mining Association
Ken Cunningham, Miranda Gold
Steve Fechner
Greg Ferdock
Greg and Lacey French
Ross Grunwald
Don Hudson
Jack Hursh
Susan Judy
K. Douglas Jung
Dan Kappes & Mike Cassiday, Kappes Cassiday & Associates

Dieter Krewedl, Krewedl Mineral Exploration
Paul Lechler
Mark Lewis, Legend Inc.
Marilyn Miller and Pat Mohn
Nevada Bureau of Mines and Geology
Northern Nevada Gold
Mike Owens, Stone Age Quarry
John Pierson, Yamana Gold
Cami and Neil Prenn
Beth and Jon Price
Becky Purkey
H. Neville & Ena Rhoden
Robinson Mining
Dan and Maureen Rovig
Debbie Russell
Dave Shaddrick
Janette Steele, CGS
Roger Steininger
Mark Stock, Global Hydrologic Services, Inc.
Mark and Charlotte Stock
Debra and Eric Struhsacker
Lance Taylor, Geotemps Inc.
Peter Vikre
Rick Walker
Scott Werschky, Miners Lunchbox
Butch Wolfange

We'd also like to thank everyone who bought tickets and made bids. Without your support, we couldn't do what we do! Happy New Year to everyone.

Rachel Dolbier & D.D. LaPointe, GSN Foundation

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

PAID ADVERTISEMENTS



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

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!



Call us any time!

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.

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

We provide analysis for:

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

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

Rapid Core Stop:

- Core Log & Cutting

www.alsglobal.com

Mineralogy Services

*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:

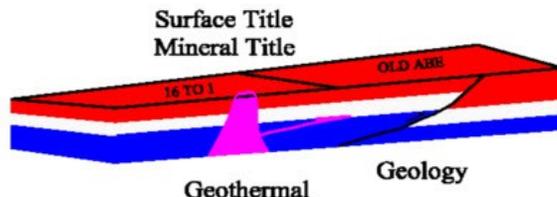
www.timberline-drilling.com

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 Arbizo-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

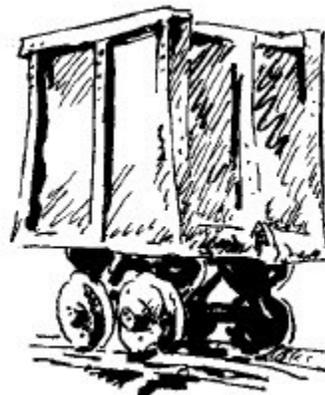
Deep Earth Imaging Technology



Minesite Imaging: Exploration,
Delineation, Condemnation

www.QuantecGeoscience.com 1.775.827.2611

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





**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:



**ORBIT GARANT
DRILLING**

www.orbitgarant.com

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

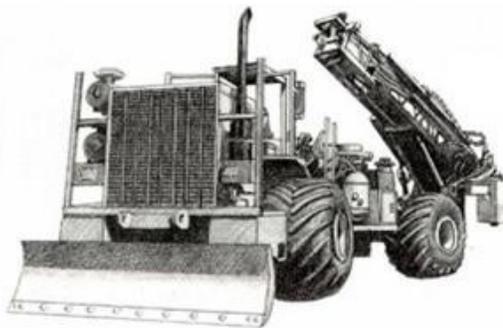
6120 Pedroli Lane
Winnemucca N.V. 89445

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