



## GSN 2020 SYMPOSIUM



VISION FOR DISCOVERY

# **GEOLOGY AND ORE DEPOSITS OF THE BASIN & RANGE TECHNICAL PROGRAM SCHEDULE FIELD TRIPS & SHORT COURSES**

May 14 – 24, 2020

RENO/SPARKS, NEVADA

Nugget Casino Resort

Sparks, Nevada

[www.gsnsymposium.org](http://www.gsnsymposium.org)

Symposium Co-Hosts





<b>Monday MORNING, May 18, 2020</b>		
<b>Start Time</b>	<b>Exhibit Hall Hours: 9:00 a.m. – 6:30 p.m. Reception: 4:00 – 6:30 p.m. Bar Open at 3:30 p.m.</b>	
8:00 – 8:10 a.m.	<b>Opening Remarks</b>	
8:10 – 8:40 a.m.	<b>Keynote</b> <b>Eric Seedorff (University of Arizona)</b> <b><i>Geometry and Evolution of Normal Faults Formed During Lithospheric Extension of Continents, with Applications to Cordilleran Metamorphic Core Complexes</i></b> <b>8:10 – 8:40 a.m. Nugget 1/2</b>	
8:40 – 10:20 a.m.	<b><i>Cordilleran Geology &amp; Tectonics – Andrew Zuza</i></b>	
8:40 a.m.	Reconstruction of Late Paleozoic Basins in Nevada: A Summary – <b>Daniel M. Sturmer</b> (Department of Geology, University of Cincinnati)	
9:00 a.m.	Orogenesis in Nevada: Inferred Relations to Plate Interactions and Mantle Flow – <b>Thomas H. Anderson</b>	
9:20 a.m.	Along-Strike Variations in Initial Shortening in the Sevier Fold – Thrust Belt and Implications for Hinterland Shortening – <b>Michael L. Wells</b> (University of Nevada, Las Vegas)	
9:40 a.m.	The Isotopic Record of Magmatism in the US Cordillera: The Importance of Mantle Lithosphere – <b>James (Jay) B. Chapman</b> (University of Wyoming)	
10:00 a.m.	A Revised Cooling and Extensional Exhumation History for the Harrison Pass Pluton, Southern Ruby Mountains Metamorphic Core Complex, Elko County, Nevada – <b>Allen J. McGrew</b>	
10:20 – 11:00 a.m.	<b>COFFEE BREAK IN EXHIBIT HALL 10:20 – 11:00 A.M.</b> <b>SPONSORED BY MAJOR DRILLING</b>	
11:00 – 12:40 p.m.	<b><i>Basin &amp; Range Roundup I (USGS/State Surveys) Nugget 1/2</i></b>	<b><i>Renewable Resources: Geothermal Cascade 2</i></b>
11:00 a.m.	Overview of Critical Minerals and Supply Chain Vulnerabilities – <b>Steven M. Fortier</b> (White House Office of Science and Technology Policy)	Geo-mining GOLD (Geothermal Opportunities Leveraged through Data) – <b>Susan Hamm</b> (Geothermal Technologies Office of Energy Efficiency & Renewable Energy, DOE)
11:25 a.m.	The US Geological Survey Earth Mapping Resources Initiative (Earth MRI) Acquisition of Framework Data for Areas with Potential for Critical Mineral Resources – <b>Warren Day</b> (US Geological Survey)	Successful Application of Play Fairway Analysis for Exploration of Blind Geothermal Systems in the Great Basin Region of Nevada – <b>James E. Faulds</b> (Nevada Bureau of Mines and Geology)
11:50 a.m.	Nevada 2019 Exploration Overview – <b>John L. Muntean</b> (Nevada Bureau of Mines and Geology)	Identifying Pathways for Enhanced Collaboration between the Mining and Geothermal Industries – <b>Greg Rhodes</b> (National Renewable Energy Laboratory, Golden, Colorado)
12:15 p.m.	Overview of Current Nevada Mineral Production and Development Activity – <b>Mike Visser</b> (Nevada Division of Minerals)	New Applications of Geothermal Play Fairway Analysis to Emerging Geothermal Sectors in Argentina and Peru – <b>Bridget Ayling</b> (Nevada Bureau of Mines and Geology)
12:40 pm	Wrap-up Questions	Wrap-up Questions

<b>Monday AFTERNOON, May 18, 2020</b>		
<b>Start Time</b>	<b>Exhibit Hall Hours: 9:00 a.m. – 6:30 p.m. Reception: 4:00 – 6:30 p.m. Bar Open at 3:30 p.m.</b>	
12:40 – 2:00 p.m.	<b>Lunch Keynote</b> <b>Keith H. Meldahl (Mira Costa College, California)</b> <b>Hard Road West – History and Geology along the Gold Rush Trail</b> <b>12:40 – 2:00 p.m. Celebrity Showroom</b>	
2:00 – 4:00 p.m.	<b>Basin &amp; Range Roundup II (Utah)</b>	<b>Nugget 1/2</b>
2:00 p.m.	Utah Mining and Exploration Update – <b>Andrew Rupke</b> (Utah Geological Survey)	A New Modal for Digital, Integrated Regional Geologic Maps and Associated Subsurface Models of Western United States – <b>Joseph P. Colgan</b> (US Geological Survey)
2:30 p.m.	Critical Minerals of Utah – <b>Stephanie Mills</b> (Utah Geological Survey)	Nevada Mineral Resource Database Project and Web Application – <b>Lucia Patterson</b> (Nevada Division of Minerals)
3:00 – 4:00 p.m.	<b>Basin &amp; Range Roundup II (Idaho)</b>	<b>Nugget 1/2</b>
3:00 p.m.	Idaho’s Current Mineral Exploration and Mining Projects: Ore Deposits through the Ages – <b>Virginia Gillerman</b> (Idaho Geological Survey)	The History of the Modern-Day Gold Rush in Nevada – <b>Richard F. Reid</b> (Consulting Geologist)
3:30 p.m.	Neogene Extension in the Basin and Range of Idaho, Yellowstone-Snake River Plain Magmatism, Northeastward Expansion of Snake River Drainage Basin, and Neogene Ore Deposits – <b>Paul K. Link</b> (Idaho State University)	Before the Gold: The Early Mining History of the Carlin Trend 1874 – 1961 – <b>Dean G. Heitt</b> (Consulting Geologist)
4:00 – 5:00 p.m.	<b>COMBINED COFFEE BREAK 4:00 – 5:00 P.M.</b> <b>POSTERS &amp; CORE SHACK</b> <b>EXHIBIT HALL</b>	
5:00 p.m.	<b>Keynote</b> <b>Charles H. Thorman (Emeritus, US Geological Survey)</b> <b>Basin and Range Geology: Evolution of Thinking from 1920 to 2020</b> <b>5:00 – 6:00 p.m. – Open to All Attendees</b> <b>Nugget 1/2</b>	

<b>Tuesday <i>MORNING</i>, May 19, 2020</b>			
<b>Start Time</b>	<b>Exhibit Hall Hours: 9:00 a.m. – 6:30 p.m. Reception: 4:00 – 6:30 p.m. Bar Open at 3:30 p.m.</b>		
8:00 - 8:30 a.m.	<b>Keynote</b> <b>Elizabeth L. Miller (Stanford University)</b> <b><i>Mesozoic and Cenozoic Tectonic Evolution of the Great Basin</i></b> <b>8:00 – 8:30 p.m. Nugget 1</b>		
8:35 - 10:15 a.m.	<b>Advances in Understanding Mesozoic Tectonism and Structural Relations Across the Northern Great Basin (Sandra Wyld, David Rhys, Douglas Prihar, Franck Valli)</b> <b>Nugget 1</b>	<b>Early- &amp; Mid-Stage Exploration Projects - Peter O'Byrne</b>  <b>Nugget 2</b>	<b>Rumors from the Bush - Pete Dilles</b>  <b>Cascade 2</b>
8:35 a.m.	Jurassic Deformation in the Northern Great Basin: An Update on Current Knowledge and Relevance for Localization of Cenozoic Epithermal Deposits – <b>Sandra J. Wyld</b>	Carlin-type Gold Mineralization at West Mercur, Oquirrh Mountains, Utah – <b>David A. Mako</b> (Rush Valley Exploration, Inc.)	Discovery and Geology of the Fourmile Deposit, Cortez District, Eureka County, Nevada – <b>Robert M. Wilson</b> (Barrick Gold Exploration Inc.)
8:55 a.m.	Geometry of Cordilleran Contractional Deformation Across the Great Basin at 39°N: Insights from Retro-Deformation of a Province-Wide Cross Section – <b>Sean P. Long</b> (Washington State University)	Tectonic Evolution and Geochronology, Jarbidge Mining District, Elko County, Nevada – <b>John D. Bernt</b>	New Discovery at the Old Pony Creek Project, Elko County, Nevada – <b>Vance R. Spalding</b> (Contact Gold Corp.)
9:15 a.m.	Reinterpretation of the Structure of the Piñon and Independence Ranges with Implications for the Understanding of Gold Mineralization Structural Controls in the Antler Foreland Basin and Beyond – <b>Franck Valli</b> (Newmont Mining Corp.)	Controls on Epithermal Gold-Silver Mineralization, Alteration at the Gravel Creek Deposit, Nevada – <b>Nicholas G. Hillemeier</b> (University of Nevada, Reno)	A New Mine in the USA and Significant Expansion in Mexico - Gold Resource Corporation Starts Isabella Pearl Mine, Mineral County Nevada and Expands Its Oaxaca Mexico Mining Unit – <b>Barry D. Devlin</b> (Gold Resource Corporation)
9:35 a.m.	The Age and Detrital Zircon Characteristics of Latest Jurassic-Earliest Cretaceous Clastic Rocks within the South Camp Peak Sequence, Genoa Peak Pendant, Carson Range, Nevada – <b>Geoff Christe</b> (Virginia Department of Environmental Quality)	Applying New Exploration Concepts to “Old” Districts in The Great Basin – <b>Chad Peters</b> (Ridgeline Minerals)	Exploration Activities Undertaken by Great Western Mining PLC in the Huntoon Valley, Nevada – <b>William Cooper</b> (Great Western Mining PLC)

9:55 a.m.	Probing the Core of the Cordilleran Hinterland Via Integrated Field Studies, NE Nevada: Records of Pulsed Mesozoic Contraction and Cenozoic Extension – <b>Andrew Zuza</b> (Nevada Bureau of Mines and Geology)	Geology and Mineral Potential of the Middle Jurassic Bonita Porphyry System, South Jackson Mountains, Humboldt County, Nevada – <b>Michael H. Gunning</b> (VR Resources Ltd.)	Exploration and Discovery History of the Cedar Wash Gold Project, Clover Mountains, Lincoln County, Nevada – <b>Robert L. Kastelic</b> (McEwen Mining Inc.)
10:15 - 11:00 a.m.	<b>COFFEE BREAK IN EXHIBIT HALL 10:15 – 11:00 A.M. SPONSORED BY MIDAS GOLD</b>		
11:00 a.m. – 1:00 p.m.	<b>Structure of Ore Deposits in the Basin and Range Region – Wyld, Rhys, Prihar, and Valli</b> <b>Nugget 1</b>	<b>Exploration Geophysics Case Histories – Chet Lide and Jim Wright</b> <b>Nugget 2</b>	<b>Far Reaches: Exploration Beyond the Basin and Range</b> <b>Cascade 2</b>
11:00 a.m.	Late Paleozoic Extensional Collapse of the Antler Highlands – <b>Lee Hess</b> (SSR Mining, Inc. - Marigold Mining Co.)	The Role of Geophysics in Exploration of the Gold Bar District, Cortez Trend, Eureka County, Nevada – <b>Robert L. Kastelic</b> (McEwen Mining Inc.)	A New Low Sulphidation Epithermal Gold District in the African Rift Valley of the Republic of Djibouti – <b>David J. Hall</b> (Thani Emirates Resource Holdings)
11:20 a.m.	Five Years Later: Progressing the Rhys Model of Fold and Fault Geometry on the Carlin Trend Via Integration of Mapping, Sequence Stratigraphy and Litho-geochemistry – <b>Gerry A. Greisel</b> (Nevada Gold Mines LLC)	Application of Geophysical and Remote Sensing Techniques to Exploration and Discovery at the DeLamar and Florida Mountain Gold and Silver Projects, Owyhee County, Idaho – <b>Robert Ellis</b> (EGC Inc.)	The Next Giant Carlin-type Gold District: Western Northwest Territories, Canada – <b>Beth J. Fischer</b> (Northwest Territories Geological Survey, Canada)
11:40 a.m.	Palinspastic Restoration of Cenozoic Extensional Deformation in the Northern Great Basin: Time-Space Patterns, Perspectives on the Eocene Geologic Architecture, and Implications for Hydrothermal Circulation – <b>Carson A. Richardson</b> (Arizona Geological Survey)	The Use of Geophysics in the Exploration for Carlin-type Deposits in the Railroad-Pinion District, Carlin Trend, Nevada – <b>Zach Grimac</b> (Gold Standard Ventures)	The Mineralogy and Geochemistry of Gold-Bearing Tennantite in the Nibao Sediment-Hosted Gold Deposit, SW Guizhou, China – <b>Dontian Wei</b> (College of Earth Sciences, Guilin University of Technology, China)
12:00 p.m.	The Eocene Stress Change in the Basin and Range as Measured by Structure in Plutons – <b>William A. Rehrig</b> (Consulting Geologist)	The Geophysical Response of the Resolution Copper Deposit, Arizona – <b>Donald Hinks</b> (Kennecott Exploration Company)	Egina Alluvial Gold Project, Pilbara Craton, Western Australia - <b>David R. Tretbar</b> (Summit Mining International)
12:20 p.m.	Structural Evolution and Ore Controls in a Caldera Setting at the Round Mountain Epithermal Deposit – <b>David A. Rhys</b> (Panterra Geoservices)	The Geophysical Response of the Goldrush-Fourmile Orebody and Implications for Camp-Scale Carlin-type Deposit Exploration, Cortez District, Nevada – <b>Lee Sampson</b> (Barrick Gold Corp.)	The Gold-Bearing Diatreme System at Veladero, Argentina – <b>Tommy B. Thompson</b> (Consulting Geologist)

12:40 p.m.	Common Genetic Links between Low-Sulfidation Epithermal Deposits and Local Transtensional Stress Settings Regardless of the Tectonic Regime: It Is Not About the Zip Code, But More the Street Address When It Comes to Finding a Suitable Geologic Setting for Deposit Formation – <b>Justin B. Milliard</b> (University of Nevada, Reno)	Questions	Geology, Mineralogy and Geochemistry of the Chauvai Gold Deposit, Kyrgyzstan: Key Evidence for Carlin-type Gold Mineralization – <b>Aizat A. Zhaanbaeva</b> (Institute of Geochemistry, Chinese Academy of Sciences)
<b>Tuesday AFTERNOON, May 19, 2020</b>			
<b>Start Time</b>	<b>Exhibit Hall Hours: 9:00 a.m. – 6:30 p.m. Reception: 4:00 - 6:30 p.m. Bar Open at 3:30 p.m. Sponsored by Major Drilling</b>		
1:00 – 2:30 p.m.	<b>Lunch Keynote</b> <b>Joe Mazumdar (Editor/Analyst, Vancouver, Canada)</b> <b>Ticking Through the Investment Clock</b> <b>1:00-2:30 PM, Celebrity Showroom</b>		
2:30 – 4:10 p.m.	<b>Eocene Tectonics, Magmatism, and Metallogeny: From Squeeze to Ease – Curtis Johnson and Mike Ressel</b> <b>Nugget 1</b>	<b>Strategic &amp; Critical Minerals – Patty Capistrant and Molly Hunsaker</b> <b>Nugget 2</b>	<b>Best Practices/Innovations in Geological Modeling/Mineral Resource Estimation – Doug Reid and Abani Samal</b> <b>Cascade 2</b>
2:30 p.m.	Eocene Extension and Basin Development in Northeastern Nevada: Two Examples from Elko County – <b>Andrew S. Canada</b> (University of Idaho)	Strategic and Critical Minerals – <b>Roderick Eggert</b> ( Colorado School of Mines)	Improved Reliability of Resource Estimate Based on Assay Quality Control – <b>Lynda Bloom</b> (Analytical Solutions, Ltd.)
2:50 p.m.	With Jurassic, Cretaceous, and Middle Miocene Magmatism Almost Everywhere, Why Was Eocene Magmatism Essential to Generate Carlin-type Gold Deposits? Lessons from the Cortez Region, Northern Nevada, USA – <b>Christopher D. Henry</b> (Nevada Bureau of Mines and Geology)	Geology of the Lithium-Boron Rhyolite Ridge Project, Silver Peak Range, Esmeralda County, Nevada – <b>John Reynolds</b> (Ioneer Ltd)	Resourceful Geologist’s Toolkit for Domain Characterization – <b>Maureen Moore-Roth</b> (Maptek)
3:10 p.m.	Carlin-type Gold Deposits: Part of the Great Basin’s Unique Eocene Metallogeny – <b>Curtis L. Johnson</b> (University of Nevada, Reno)	The Surge for Cobalt in the New Electric Car-World: Where Will It Come From? – <b>Frank Santiguida</b> (First Cobalt Corp.)	The Seequent Solution for Resource Modelling, Data Management, and Collaboration – <b>Peter Oshust</b> (Seequent Ltd.)

3:30 p.m.	The Emigrant Pass Volcanic Field: New Constraints on Magmatic Models For Carlin-Trend Gold Deposits – <b>Nansen H. Olson</b> (Oregon State University)	REE-Bearing Cambrian-Ordovician Episyenites and Carbonatites in Southern and Central New Mexico – <b>Virginia T. McLemore</b> (New Mexico Bureau of Geology and Mineral Resources)	Best Practices and Innovations in Geological Modeling and Mineral Resource Estimation – <b>Kiersten Briggs</b> (Mine Development Associates)
3:50 p.m.	The Temporal Relationship Between Magmatism and Hydrothermal Fluid Flow in Sedimentary Rock-Hosted Disseminated Gold Deposits of the Northern Battle Mountain Mining District, Nevada – <b>Dante Huff</b> (Colorado School of Mines)	Precious and Base Metal Mineralization within the Lower Stratigraphy of the Stillwater Complex: New Targets Discovered and Old Targets Revisited – <b>Craig S. Bow</b> (Group Ten Metals Inc.)	The Importance of Geomet in Resource Estimation – <b>Karin E. Olson-Hoal</b> (Cornell University)
4:10 – 5:00 p.m.	<b>COFFEE BREAK IN EXHIBIT HALL 4:10 – 5:00 P.M. SPONSORED BY MAJOR DRILLING</b>		
5:00 – 6:00 p.m.	<b>Eocene Tectonics, Magmatism, and Metallogeny: From Squeeze to Ease – Curtis Johnson and Mike Ressel</b> <b>Nugget 1</b>	<b>Strategic &amp; Critical Minerals – Patty Capistrant and Molly Hunsaker</b> <b>Nugget 2</b>	<b>Best Practices/Innovations in Geological Modeling/Mineral Resource Estimation – Doug Reid and Abani Samal</b> <b>Cascade 2</b>
5:00 p.m.	Crustal Architecture of the Northern Great Basin and Crustal Recycling in Cenozoic Calderas Revealed by O and Sr Isotopic Analyses: Implications for Ignimbrite Flare-Up Processes and Metallogeny – <b>Kathryn E. Watts</b>	Preliminary Results of Geologic Mapping in the Mountain Pass Earth Mapping Resources Initiative (Earth-MRI) Focus Area, San Bernardino County, California – <b>Ben Parrish</b> (California Geological Survey)	Application of Geostatistics in Mineral Resource Estimation for Exploration Projects – <b>Abani Samal</b> (GeoGlobal LLC)
5:20 p.m.	Mineralization, Alteration and Breccias of the El Nino Au-Ag Deposit, Elko County, NV – <b>Rocky Barker</b> (University of Waikato)	Thacker Pass Lithium Clay Deposit, McDermitt Caldera, North-Central Nevada: Constraints on the Origin of Lithium in an Intracaldera Lacustrine Setting – James T. Ingrassia (University of Nevada, Reno)	Resource Model Peer Review – <b>Frederick J. Breit</b> (Newmont Mining Corp.)
5:40 p.m.	Insight into the Timing and Tectonic Setting of Late Cretaceous-Oligocene Ore Deposits in the Fold-Thrust Belt of Western Montana – <b>Kaleb Scarberry</b> (Montana Bureau of Mines and Geology)	Conventional and Unconventional Deposits of Lithium, Cobalt, and Rare Earth Element Resources in the United States – <b>Jeffrey L. Mauk</b> (U.S. Geological Survey)	The U.S. Securities and Exchange Commission’s New Regulation S-K 1300 Disclosure Requirements for Mining Registrants; What Every Minerals Geologist Needs to Know – <b>Donald J. Birak</b>

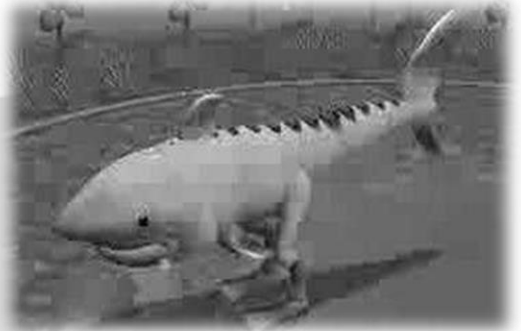


<b>Wednesday <i>MORNING</i>, May 20, 2020</b>			
<b>Start Time</b>	<b>Exhibit Hall Hours: 9:00 a.m. – 4:00 p.m. Followed by Exhibit, Core Shack and Poster Take Down</b>		
8:00 – 8:30 a.m.	<b>Keynote</b> <b>John Prochnau (Consulting Geologist)</b> <b><i>Geology, The Art of Exploration</i></b> <b>8:00 – 8:30 a.m. Nugget 2</b>		
8:30 – 9:00 a.m.	<b>Keynote</b> <b>Richard J. Goldfarb (Consulting Geologist)</b> <b><i>Carlin-like and Carlin-Unlike Deposits: A Perspective from the Orogenic Gold World</i></b> <b>8:30 – 9:00 Nugget 2</b>		
9:00 – 10:40 a.m.	<b>Environment &amp; Exploration - Ben Veach</b> <b>Cascade 2</b>	<b>Carlin on the Edge: Off-Trend Deposits and Concepts – Moira Smith</b> <b>Nugget 2</b>	<b>US Geological Survey EarthMRI Roundtable - A Discussion of Critical Minerals Exploration and Development in the US</b>  <b>Panel Members: Tom Crafford, Warren Day, Al Hofstra, Jane Hammarstrom, and Lisa Stillings</b>  <b>Session will consist of 5 talks at 10 minutes each followed by a 25 minute round table discussion with audience participation</b>
9:00 a.m.	<b>Ruth Griffiths: Goldfields tailing</b>	The Black Pine Gold Oxide Project, Southeastern Idaho: A New Look at a Historic Mining District – <b>Will A. Lepore</b> (Liberty Gold Corp.)	
9:20 a.m.		Sterling/Crown Gold Deposits of the Bare Mountains, Southern Nevada – <b>Hans J. Rasmussen</b> (Coeur Explorations, Inc.)	
9:40a.m.		Geology and Mineralization of the Long Canyon Gold Mine, Elko County, Nevada – <b>Karl Lowry</b> (Nevada Gold Mines LLC)	
10:00 a.m.		Carlin-type Au deposits in “Dian-Qian-Gui” Area, Southwest China: Recent Exploration and Key Characteristics – <b>Zhuojun Xie</b> (Chinese Academy of Sciences)	
10:20 a.m.		The Permian Carlin-type Gold Deposits in Southwest Kyrgyz Republic – <b>Douglas J. Kirwin</b> (Consulting Geologist)	
10:40 – 11:20 a.m.	<b>COFFEE BREAK IN EXHIBIT HALL 10:40 – 11:20 A.M.</b> <b>SPONSORED BY SSR MARIGOLD</b>		

**Cascade 1**

11:20 a.m. – 1:00 p.m.	<b>High Sulfidation Precious Metal Deposits: Recent Global Discoveries and Great Basin Analogs – Pete Dilles</b> <b>Cascade 2</b>	<b>Intrusion-related Deposits – Mike Ressel</b> <b>Nugget 2</b>	<b>Geochemical Crossroads: Time to Look Deeper and Under Cover – Clark Smith and Wade Hodges</b> <b>Cascade 1</b>
11:20 a.m.	Characteristics of High-Sulfidation (or Au-Ag-Cu-As) Epithermal Deposits: A 2020 Perspective – <b>Antonio Arribas</b> (The University of Texas at El Paso)	Majuba Hill Copper Porphyry: Copper Production in Nevada – Now and in the Future – <b>Buster Hunsaker</b> (Hunsaker Inc)	Under Cover Carlin-type Gold Deposit Exploration: South Grass Valley, Lander County, Nevada – Gabriel E. Aliaga (Nevada Exploration Inc)
11:40 a.m.	Formation, Preservation, and Tectonic Modification of High-Sulfidation Epithermal Mineralization in Extensional Settings: Insights from the Mt. Carlton Au-Ag-Cu Deposit, NE Australia – <b>Fredrik Sahlström</b> (James Cook University)	The Great Basin Porphyry Molybdenum Province: An Overview – <b>Roger C. Steininger</b> (Consulting Geologist)	Direct Discovery of Buried Mineralization Through Microbial Community Profiling – <b>Bianca P. Iulianella Phillips</b> (Mineral Deposit Research Unit, The University of British Columbia)
12:00 p.m.	Discovery and Geology of La Yaqui Grande High-Sulfidation Au-Ag Deposit, Mulatos District, Sonora, Mexico – <b>Anthony A. Longo</b> (Spire Exploration)	Willow Cu-Mo Project, Buckskin Range, Douglas County, Nevada: On the Trail of the Fifth Yerington Porphyry Deposit – <b>K. Brock Riedell</b> (Consulting Geologist)	Geochemical Studies at the South Sleeper Project, Humboldt County, Nevada – <b>Jeffrey A. Jaacks</b> (Geochemical Applications International)
12:20 p.m.	Geologic Setting and Mineralization of the Isabella Pearl Mine, Mineral County Nevada – <b>Joy Lester</b> (Gold Resource Corporation)	Magmatism, Hypogene, and Supergene Mineralization Characteristics of the Lone Star Porphyry Copper Deposit, Safford District, Arizona – <b>Ralph Stegen</b> (Freeport-McMoran Exploration Corp.)	Discovering Mineralization Under Cover in the Atacama Desert with Strategic Sampling along Structures: Applications to Nevada – <b>Alexandra Brown</b> (Mineral Deposit Research Unit, University of British Columbia)
12:40 p.m.	Quartz-Alunite Alteration in the Buckskin Range, Yerington district, Nevada – The Origin of Barren Lithocaps Above Porphyry Copper Deposits – <b>Michael D. Sepp</b> (Oregon State University)	Oligocene, Intrusion-Related, Sediment-Hosted Gold Mineralization of the Fondaway Canyon District, Nevada – <b>Jacob Margolis</b> (Canarc Resource Corp)	Phytogeochemistry: Four Decades of Subsurface Discovery and Metal Deposit Characterization in Nevada – <b>Shea Clark Smith</b> (MEG, Inc)

<b>Wednesday AFTERNOON, May 20, 2020</b>			
<b>Start Time</b>	<b>Exhibit Hall Hours: 9:00 a.m. – 4:00 p.m. Followed by Exhibit, Core Shack and Poster Take Down</b>		
1:00 – 2:30 p.m.	<b>Lunch Keynote</b> <b>Quinton T. Hennigh (President/Chairman, Novo Resources Corp.)</b> <b><i>Gold in the Pilbara, Western Australia: A Perspective on the Establishment of Earth's Crustal Gold Cycle</i></b> <b>1:00–2:30 PM, Celebrity Showroom</b>		
2:30 – 5:20 p.m.	<b>New Technologies for Exploration – Brian Cellura</b>	<b>Epithermals II. Low Sulfidation – Odin Christensen</b>	<b>Geochemical Crossroads: Time to Look Deeper and Under Cover – Shea Clark Smith and Wade Hodges</b>
	<b>Cascade 2</b>	<b>Nugget 2</b>	<b>Cascade 1</b>
2:30 p.m.	Advancements in Hyperspectral Core Imaging – Exploring New Wavelength Regions – <b>David A. Browning</b> (Terracore Ltd.)	Magmatic-Tectonic settings of Cenozoic Low and Intermediate Sulfidation Epithermal Gold-Silver Deposits of the Great Basin, Western United States – <b>David A. John</b> (US Geological Survey)	Exploration Through Cover: Unearthing the Next Generation of Gold Deposits in the World Class Carlin-type Deposits of Nevada – <b>Simon J. Griffiths</b> (Third Planet Exploration Services)
2:50 p.m.	Vertical Electrical Sounding (VES) and Its Application to Mineral Exploration in Areas with Covered Terrain – Pediment: A Case Study Comparing VES Results with Well Control – <b>Bill Ehni</b> (Ehni Enterprises Inc.)	Distal and Peripheral Exploration Guides to Low-Intermediate-Epithermal Sulfidation Vein Deposits Based on Studies of Modern Hydrothermal Systems – <b>Stuart F. Simmons</b> (Hot Solutions Ltd.)	Concealed Ore Prospecting at the Shuiyindong Au Deposit in Southwestern Guizhou, China – <b>Qinping Tan</b> (Institute of Geochemistry, Chinese Academy of Sciences)
3:10 p.m.	Spectral based mineral maps derived from 2018 AVIRIS imaging spectrometer data of the Battle Mountain District, Humboldt and Lander Counties, Nevada – <b>John M. Meyer</b> (Colorado School of Mines)	The Geology of the Castle Mountain Low-Sulfidation Epithermal Gold Deposit, San Bernardino County, California – <b>Eric R. Thalsen</b> (Colorado School of Mines)	Defining the Carbonate Alteration Haloes at the Cortez Hills Carlin-type Gold Deposit, using Stable Oxygen Isotopes and Carlin Pathfinder Elements as a Vectoring Tool – <b>Christopher S. Herron</b> (Mineral Deposit Research Unit, University of British Columbia)
3:30 p.m.	Advancements in Hyperspectral Remote Sensing for Regional Exploration in Nevada – <b>David W. Coulter</b>	Fire Creek Low-Sulfidation Epithermal Deposit, Lander County, Nevada – <b>Christopher D. Mack</b> (Hecla Mining Co.)	Quantifying the Effect of Field Filtration Versus Laboratory Filtration in Hydrogeochemical Sampling – <b>Amanda Stoltze</b> (ALS Global)
3:50 – 4:25	<b>COFFEE BREAK IN EXHIBIT HALL 3:50 – 4:20 P.M.</b>		
4:20 p.m.	A New Induced Polarization and Resistivity Method for Deep Exploration – <b>Jonathan Rudd</b> (Dias Geophysical)	Epithermal Gold-Silver Mineralization at the Hollister Mine, Elko County, Nevada – <b>Randall B. Vance</b> (Hecla Mining Co.)	Adsorption of Arsenic and Antimony in Alluvium: Implications for Exploration Geochemistry in the Great Basin – <b>Robert J. Bowell</b> (SRK Consulting)

4:40 p.m.	Machine Learning and Big Data, The Future of Exploration Targeting and New Discovery – <b>Marc Antoine Leporte</b> (SGS Geological Services)	Geology of the National District, Northern Humboldt County, Nevada – Exploration Update of a Consolidated District – <b>Warren F. Thompson</b> (National Gold Mining Corp.)	
5:00 p.m.	Emerging Technology and Processes for Exploration. Deep Magnetotelluric Resistivity Imaging Is Providing New Insights into Large-Scale Regional Exploration As Well As Solving Local Exploration Issues and Leading to Discovery – <b>Robert Gordon</b> (Quantec Geoscience)	Regional Setting and Exploration Potential, DeLamar – Silver City District, Idaho: Paleosurface Preservation and Active Analogues – <b>Jeffrey W. Hedenquist</b> (Consulting Geologist)	
5:30 p.m.	<b>GSN Foundation – <i>Landshark Lounge</i> Party</b>		<b>Nugget 1</b>
<b>Thursday, May 21, 2020</b>			
<b>Start Time</b>	<b>Exhibit Hall Take Down: 8:00 a.m. – 12:00 p.m.</b>		
8:00 – 8:30 a.m.	<b>Keynote</b> <b>Richard H. Sillitoe (Consulting Geologist)</b> <b><i>Carlin-type and Distal-disseminated Gold Deposits: A Carbonate-replacement Deposit Perspective</i></b> <b>8:00 – 8:30 a.m. Nugget 1</b>		
8:35 – 10:35 a.m.	<b>Carlin-type &amp; Carlin-like Deposits – Marcus Johnston and Mike Ressel</b>  <b>Nugget 1</b>	<b>Advanced Projects: From Drillhole to Blasthole, New Mine Development in the Western US – Chad Peters and Mike Harp</b>  <b>Nugget 2</b>	
8:35 a.m.	Dark Star Gold Deposit, Railroad District, Elko County, Nevada – <b>Steven R. Koehler</b> (Gold Standard Ventures Corp.)	Reactivating a Historical District: Exploration and Development of the Gold Bar Project, Eureka County, Nevada – <b>Robert L. Kastelic</b> (McEwen Mining Inc.)	
8:55 a.m.	The Physicochemical Characteristics of Ore Fluids in Carlin-type Au Deposits Inferred from Ore-Stage Carbonate Veins: An Example from the Nadaleen Trend, Yukon. – <b>Andrew P. Steiner</b> (University of British Columbia)	Fiore Gold’s Pan Mine, Resurrection, Startup, and Growth - <b>Paul D. Noland</b> (Fiore Gold Ltd.)	
9:15 a.m.	Lone Tree, Battle Mountain District: Evidence for Distal Disseminated Gold Mineralization – <b>Elizabeth A. Holley</b> (Colorado School of Mines)	Recent Exploration at the DeLamar District of Idaho, with Some Thoughts on Volcano-Tectonic Controls on Mineralization. – <b>E. Max Baker</b> (Integra Resources Corp.)	
9:35 a.m.	An Evaluation of Thermal Metamorphism and Its Relationship to Mineralization in the Maggie Creek District, Carlin Trend, Nevada – <b>Benjamin G. Robinson</b> (University of Arizona)	The History, Geology and Gold Mineralization at the Goldstrike Deposit, Southwestern Utah: An Unusual, Off-Trend, Carlin-type Gold Deposit – <b>Pete Shabasteri</b> (Liberty Gold Corp.)	

9:55 a.m.	Sulfide Trace Element and Isotope Compositions as Indicators of Fluid Source Characteristics in Carlin-type and Carlin-Like Gold Deposits – <b>Anne A. Fulton</b> (Colorado School of Mines)	New Gold Discoveries in the Bullfrog Mining District, Nevada - North Bullfrog & Mother Lode Deposits – <b>Jeffrey A. Pontius</b> (Corvus Gold, Inc.)
10:15 a.m.	Alteration Footprints, Auriferous Pyrites and Controls on Fluid Flow in the Carlin-type Gold Deposits of Nevada – <b>Shaun L. Barker</b> (CODES, University of Tasmania)	An Update on Redevelopment of a World Class Mining District: Stibnite, Idaho – <b>Christopher Dail</b> (Midas Gold)
10:35 – 10:50 a.m.	<b>COFFEE BREAK IN FOYER BY REGISTRATION 10:35 – 10:50 A.M.</b>	
10:50 a.m. – 12:30 p.m.	<b>Mineral Textures as Ore Vectors – Anthony Gesualdo and Mike Ressel</b> <b>Nugget 1</b>	<b>Metal deposits of the Walker Lane: New Developments in Old Districts – David John/Peter Vikre</b> <b>Nugget 2</b>
10:50 a.m.	Unidirectional Solidification Textures: A Field Review – <b>Douglas J. Kirwin</b> (Consulting Geologist)	Prospect Generation Methods Used to Identify the Silicon Project as an Unclaimed Gold Target in a Mature Exploration Environment – <b>Mark F. Coolbaugh</b> (Renaissance Gold Inc.)
11:10 a.m.	Multiscale Mineral Textures as Exploration Vectors in Carbonate Replacement Deposits – <b>Peter K.M. Megaw</b> (IMDEX, Inc.)	Updates to the High-Sulfidation Goldfield District, Esmeralda County, Nevada – <b>Brian May</b> (Gemfield Resources LLC )
11:30 a.m.	Nanoscale to Hand Sample Textures: What They Tell us About Gold in Carlin Deposits – <b>Jean S. Cline</b> (University of Nevada, Las Vegas, emerita)	Post-subduction Volcanic Rocks and Epithermal Precious Metal Deposits of the Patterson Mining District, Sweetwater Mountains, Mono County, California and Lyon County, Nevada – <b>Carli H. Balogh</b> (University of Nevada, Reno)
11:50 a.m.	Origins of Calcite and Quartz Lattice Textures in Epithermal Deposits – <b>Stuart F. Simmons</b> (Hot Solutions Ltd.)	Ancestral Cascade Arc Magmatism, Extensional Tectonics, and Miocene Epithermal Silver-Gold Deposits near Tonopah, Nevada: New Ideas about Old Districts – <b>David A. John</b> (US Geological Survey)
12:10 p.m.	Distribution and Textural Characteristics of Ore Minerals in Bonanza-type Quartz Veins at the Buckskin National and Fire Creek Deposits, Nevada – <b>TadsudaTaksavasu</b> (Colorado School of Mines)	Relationships of Magmatic Evolution, Sulfide Saturation, and Devolatilization to Mineralogy and Ag/Au of diverse Ag-Au(-Cu) Deposits in the Tonopah and Goldfield Districts, Nevada – <b>Peter G. Vikre</b> (US Geological Survey)
12:30 p.m. – 2:00 p.m.	<b>APPETIZER STYLE LUNCH AND DRINKS 12:30-2:00 P.M.</b>	
12:30 – 2:00 p.m.	<b>Closing Keynote</b> <b>Moira T. Smith</b> <b><i>Exploration in the 21st Century: Navigating the New Paradigm</i></b>  <b>Nugget 1</b>	<b>Student Awards</b> <b><i>Following Moira's Keynote</i></b>  <b>Nugget 1</b>

<b>Pre-Meeting Field Trips – May 14 – May 17, 2020</b>				
<b>Trip #</b>	<b>Title</b>	<b>Date</b>	<b>Stops</b>	<b>Description</b>
1	<b>Epithermal Deposits of Northern Nevada and Southwest Idaho</b>  <i>Leaders:</i> Randy Vance John Marma Justin Milliard	4 days – May 14 – 17 leave a.m.	DeLamar (Idaho) Fire Creek, Mule Canyon Holister, Midas(?)	This field trip will examine several epithermal precious metal deposits located along mid-Miocene rifts in northern Nevada and southwestern Idaho. The focus of the trip will be on deposit characteristics, host rocks, genesis, and exploration criteria, including the subtle expressions of the upper portions of bonanza ore shoots. This trip is designed for experienced geologists, mining engineers, and others seeking to learn about gold-silver deposits associated with Miocene-age volcanic rocks.
2	<b>Structural Controls of Geothermal Systems</b>  <i>Leader:</i> Jim Faulds	2 days - May 16 – 17	Hot Springs Mtns Bradys Hot Springs, Desert Peak, San Emidio-Wind Mountain, Gerlach, Blue Mountain, Florida Canyon	Nevada has more geothermal resources than any other state, but most of these resources are hidden with no surface manifestations. This two day trip will examine the structural controls on currently active geothermal systems in western Nevada and the similarities between these present-day geothermal systems and late Miocene-Pliocene epithermal mineral deposits. In some areas, the current geothermal activity is collocated with the epithermal mineral deposits. We will focus on viewing several representative, favorable structural settings for hydrothermal systems and how we can apply this knowledge to both geothermal and mineral exploration.
3	<b>The Famous Comstock Gold and Silver District</b>  <i>Leader:</i> Don Hudson	1 day – Saturday May 16, leaving a.m. after ~1hr presentation	Virginia City Epithermal District	This one day trip will explore the complex geologic setting of one of the richest epithermal districts in the U.S. The trip will consider the characteristics of several superimposed hydrothermal systems in the Virginia City area near Reno.
4	<b>Seismic Hazards &amp; Evolving Landscapes, Reno-Carson-Tahoe Area</b>  <i>Leader:</i> Rich Koehler	1 day – May 17, leave AM	Petersen Mountain Fault along Red Rock Road  Warm Springs Valley Fault in the Southern Honey Lake Basin	This field trip will focus on research on the relative activity of earthquake faults in the northern Walker Lane, near Reno, Nevada. The northern Walker Lane accommodates ~7 mm/yr of right-lateral shear and contains numerous active faults capable of producing large earthquakes. Several recent paleoseismic studies have been completed in this area and have included mapping of Quaternary deposits and fault scarps, subsurface trenching, and geochronologic analyses on faulted deposits. We will visit several of the paleoseismic sites and discuss the geomorphic expression of active fault traces, the number and timing of paleo-earthquakes, and implications to seismic hazards assessment in the Reno area.

<b>Post-Meeting Field Trips – May 21 – May 24, 2020</b>				
<b>Trip #</b>	<b>Title</b>	<b>Date</b>	<b>Stops</b>	<b>Description</b>
5	<b>Epithermal Deposits of the Walker Lane, Nevada</b>  <i>Leaders:</i> Ellie Leavitt Elliott Christ	3.5 days – May 21 – 24, leave at noon	Secret Canyon & Daisy pits Motherlode Silicon, Sterling, N. Bullfrog Isabella-Pearl, Gemfield	Exploration in the central portion of the Walker Lane has been hot in recent years. This field trip will examine the relationships between low-sulfidation, high-sulfidation, and sediment-hosted disseminated gold/silver deposits. Detachment tectonics will add some spice to this fascinating brew of deposits.
6	<b>Introduction to Carlin Gold Deposits</b>  <i>Leaders:</i> Jean Cline Nancy Richter	3 days – May 22 – 24, leave AM	Twin Creeks, Turquoise Ridge, Carlin Trend, and Cortez District including Fourmile and Goldrush	What are the classic features of this important class of gold deposits? Find out by visiting several deposits along three major trends on this trip designed for geologists wanting an introduction to Carlin deposits or an update on the most current geologic thoughts about them.

<b>Pre-Meeting Short Courses – May 14 – May 17, 2020</b>		
<b>Course #</b>	<b>Title</b>	<b>Presenters</b>
SC1	<b>Best Practices in Mineral Resource Estimation – A Two Day Refresher Course</b>	Abani Samal, GeoGlobal LLC
SC2	<b>Analytical Data Management, Quality Assurance &amp; Reporting</b>	Lynda Bloom and Chantal Jolette
SC3	<b>Introduction to US Mining Law</b>	R. Craig Johnson, Parsons, Behle, and Latimer, Salt Lake City, Utah
SC4	<b>Carlin Type Mineral Deposits</b>	MDRU – Craig Hart, Ken Hickey, Shaun Barker, Dave Rhys, and Mike Ressel
SC5	<b>Spectral Geology: Remote Sensing to Spectral Petrology, Exploration through Life of Mine</b>	TBA
SC6	<b>NEPA for Mining Geologists</b>	Matt Peterson and other SWCA environmental consultants
<b>Post-Meeting Short Courses – May 21 – May 23, 2020</b>		
SC7	<b>Geologic and Resource Modeling in Leapfrog</b>	SRK Resource Geology Team
SC8	<b>Geometallurgy for Geologists and Metallurgists</b>	Thom Seal and Carl Nesbitt
SC9	<b>Wilderness First Aid</b>	Susan Purvis
SC10	<b>Nevada Bureau of Mines and Geology Mineral Resource Database Project</b>	Lucia Patterson
SC11	<b>Geophysical Exploration and Structural Analysis Applied to Gold and Silver Exploration in the Western and Northern Cordillera</b>	Simon Craggs, SRK Consulting, Toronto and Stephen Reford, Paterson, Grant & Watson Limited, Toronto

Notes:

