UPDATE ON PRODUCTION AND EXPLORATION ACTIVITY IN NEVADA

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\textsuperscript{1}Nevada Bureau of Mines and Geology (www.nbmg.unr.edu)

\textsuperscript{2}Nevada Division of Minerals (minerals.state.nv.us)
$490+/oz Au!

THE MAIN POINT: Nevada is a really great place to explore for and mine gold.
Latest Statistics from the Nevada Division of Minerals (minerals.state.nv.us) and the Nevada Bureau of Mines and Geology (www.nbmg.unr.edu)

Photo credits to Mike Visher, Jeff Scovil, JGP, and others
We are in the midst of the biggest gold boom in American history.

Mostly Carlin and other Nevada deposits = 186 M oz

‘49ers = 29 M oz
Nevada produced ~87% of U.S. and 9% of world gold in 2004.
23 major gold mines
(8 not on the trend with production > 100K oz)
Trends of Mineral Deposits

- Metals (mostly Au, Cu, Ag)
- Industrial minerals
Trends of Mineral Deposits

Carlin trend

X Metals (mostly Au, Cu, Ag)
X Industrial minerals
Trends of Mineral Deposits

Battle Mountain-Eureka trend
(aka Cortez trend and with Getchell and Twin Creeks included)

X Metals (mostly Au, Cu, Ag)
X Industrial minerals
Trends of Mineral Deposits

Walker Lane

Metals (mostly Au, Cu, Ag)

Industrial minerals
Metals (mostly Au, Cu, Ag)

Industrial minerals
The Nevada Bureau of Mines and Geology is updating its “Gold and Silver Resources in Nevada” map as a GIS layer as well as a paper copy.

- Locations of over 900 known gold and silver deposits
47% of Nevada gold production in 2004 was from the Carlin trend. On about May 1, 2005, the Carlin trend had produced a total of 60 million ounces of gold.

Section by Steve Moore & others, Newmont, NBMG Bulletin 111 - **Gold Deposits of the Carlin Trend**, edited by Tommy Thompson, Lew Teal, and Dick Meeuwig (204 pages, with detailed geologic maps and sections – $35 from www.nbmg.unr.edu)
The Betze-Post mine was the most productive pit: 1.38 million ounces of gold in 2004. Barrick’s near-pit exploration added about 2 million ounces of reserves in 2004.
The Meikle mine was the most productive underground mine: 561,345 ounces of gold in 2004.
The Cortez JV reached the 10 million ounce total gold production milestone and produced 1.05 million ounces in 2004. Mining 300,000 tons per day at the Pipeline deposit is aided by the use of 400-ton trucks.
The Cortez Hills and Pediment deposits, near the earlier Cortez operations at the foot of Mount Tenabo, contain 9.6 million ounces, with intercepts as good as 410 feet @ 1.035 opt.
Phoenix Project
(Newmont)

6.0 million ounces of gold (reserve)
515 million pounds of copper (reserve)

Production began in 2005
400,000 to 450,000 ounces of Au/yr
and 18 to 20 million pounds of Cu/yr
(+ 2.2 million ounces of Ag/yr)

Mill under construction, May 2005
Expansion fully underway at the Marigold mine
When new production is phased in (in 2005), production will rise from about 75,000 oz Au/year to about 180,000 oz Au/year.

MEASURED AND INDICATED RESOURCE:
71.6 million tons @ 0.031 opt = **2.22 million oz Au**
Standard deposit (22.5 Mt @ 0.018 opt Au), near Florida Canyon in Pershing County: permitted in less than two years! poured its first gold in December of 2004 annual production of 30,000 to 40,000 ounces 400 thousand ounces total
SIGNIFICANT DEVELOPMENTS

Placer Dome-Newmont JV – Turquoise Ridge in Humboldt County: reserve of 9 million ounces in ore averaging 0.6 opt Au
Turquoise Ridge – realgar-rich ore
SIGNIFICANT DEVELOPMENTS

Newmont – Twin Creeks in Humboldt County: 4.7 million ounces of reserves added to the north (2.7 million ounces of refractory ore averaging 0.091 opt Au) and south (about 2 million ounces of oxide ore averaging 0.061 opt Au); will extend mine life through 2018.
SIGNIFICANT DEVELOPMENTS

Atna Resources – Pinson mine area in Humboldt County: ~1.9 million ounces in 1.8 million tons of measured and indicated resources @ 0.30 opt Au plus 4.2 million tons of inferred resources @ 0.32 opt Au; 76.8 feet with an average grade of 0.45 opt Au.
Adit from the CX pit at Pinson
SIGNIFICANT DEVELOPMENTS

Centerra Gold – Ren property on the Carlin trend: ~1.3 million ounces in 2 million tons of indicated resource @ 0.382 opt Au plus 1.39 million tons of inferred resource @ 0.37 opt.
SIGNIFICANT DEVELOPMENTS

Newmont – Emigrant deposit in Elko County: reserve of about 1.2 million ounces in run-of-mine oxide ore averaging 0.018 opt Au
SIGNIFICANT DEVELOPMENTS

Barrick Gold – East Archimedes deposit at Eureka:
~1.0 million ounces in 13.99 million tons of proven reserve
@ 0.061 opt Au plus 2.58 million tons probably resource with comparable grade;
construction is underway;
production is expected in mid-2007. Barrick is also drilling “Ruby Deeps,” exploring for high-grade ore below the East Archimedes deposit.
SIGNIFICANT DEVELOPMENTS

Vista Gold – Hycroft mine in Humboldt County: ~585 thousand ounces in reserve of 32.5 million tons @ 0.018 opt Au
SIGNIFICANT DEVELOPMENTS

Gryphon Gold-Golden Phoenix Minerals – Borealis mine in Mineral County: ~1.5 million ounces in resource of 43.3 million tons @ 0.034 opt Au
SIGNIFICANT DEVELOPMENTS

Metallic Ventures – Converse property in Esmeralda County: ~3.9 million ounces in resource of 263 million tons @ 0.015 opt Au – planning a feasibility study
Nevada is a really great place to explore for and mine gold.

### 2004 Gold Production Per Unit Area

<table>
<thead>
<tr>
<th>Country</th>
<th>Metric Tons Per Million Square Kilometers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nevada</td>
<td>745</td>
</tr>
<tr>
<td>South Africa</td>
<td>280</td>
</tr>
<tr>
<td>Peru</td>
<td>134</td>
</tr>
<tr>
<td>Indonesia</td>
<td>49</td>
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<tr>
<td>Australia</td>
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<td>China</td>
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</tr>
<tr>
<td>Canada</td>
<td>13</td>
</tr>
<tr>
<td>Russia</td>
<td>10</td>
</tr>
</tbody>
</table>

*Worldwide average: 16*
The Coeur Rochester mine in Pershing County produced its 100 millionth ounce of silver in January 2004. Production in 2004 was 5.67 million ounces of silver at an 82:1 silver:gold ratio.
Quadra Mining restarted production at the Robinson (Ely) mine in White Pine County in 2004 (reserve = 145 million tons @ 0.687% Cu, ~0.01% Mo, and 0.008 opt Au; ten-year mine life averaging 165 million pounds of Cu, 1 million pounds of Mo, and 57,000 ounces of Au per year; purchased from BHP Billiton for $18 million)

27 million pounds of Cu produced in 2004

Mo circuit coming on line late in 2005 or early 2006
Nevada Population
(U.S. Census, 1850-2000; estimated for 2004; projected to 2020)
Gypsum at the Selenite pit, Empire mine, Pershing County
The Las Vegas urban area is growing in population at a rate of 9 to 10 people per hour and in size at a rate of 2 acres an hour.
But geodetic data indicate that we are only gaining about 1.5 acres of area per year through crustal extension.
Where is that 1.5 acres on the Strip?
Barite – Nevada is the leading producer in the USA.
Miocene fish fossils in diatomite
Lithium mining – unconventional, extraction of brine from wells; Clayton Valley, Esmeralda County
Lithium brine pool, with cinder cone in background, Clayton Valley
Energy prices are on the rise.
Capacity for geothermal power production is rising.
known and potential geothermal resources

- Potential resource >100° C (212° F)
- Potential resource <100° C (212° F)

Compiled by the Energy and Geoscience Institute, University of Utah
Fly Ranch Geyser, Washoe County

NBMG Map 141, revised edition ($16 or free, along with considerable data on individual geothermal areas and springs, at www.nbmg.unr.edu)
Arnold Schwarzenegger – Jesse Ventura Tag Team
Exploration is occurring in most of Nevada’s 17 counties and many of its 526 mining districts.
EXPLORATION ACTIVITY
(153 Projects)

New mine = test mining and permitting
Major drilling (≥25 holes)
Minor drilling (<25 holes)
Planned drilling = yellow

Lots of Activity!

after Muntean, NBMG, 2005
EXPLORATION ACTIVITY (By Size of Company)

Major = red
Mid = yellow
Junior = green

Room for Everybody!

after Muntean, NBMG, 2005
EXPLORATION ACTIVITY (By Metal)

Gold = red

Mostly Gold, but Other Metals Too!

after Muntean, NBMG, 2005
EXPLORATION ACTIVITY
(Notable Drill Programs)

Discoveries Are Being Made!

after Muntean, NBMG, 2005
BIG SPRINGS

GATEWAY

GOLD

Jerritt Canyon Mine District
(100% Queenstake Mining)
BIG SPRINGS
GATEWAY GOLD

• Previous operator resource estimate of 850K+ oz Au (open pit) and 150K+ oz Au (underground) mineralization
• 150,000 ft of drilling (250 holes) and $7M spent from 2003 thru 2005
• New discoveries at Beadles Creek, Crusher, 601/701 zones, and nearby Dorsey Creek
• New resource calculation underway
CORNERSTONE
NEVADA PACIFIC

• Adjacent to U.S. Gold 1.4M oz Au Tonkin Springs deposit and NPG Keystone project
• Trench#1 intersected 10’ of 0.32 opt Au within 162’ of 0.028 opt Au
• Near surface drill intercepts of 65’ of 0.023, 50’ of 0.051, and 130’ of 0.055 opt Au
• Additional road cuts and drill pads have been permitted
FIRE CREEK
KLONDEX MINES

Open Pit produced 1,000 oz Au in 1983
FIRE CREEK

KLONDEX MINES

Hole FC 0417
5 ft of 12.0 opt Au at 1,230 ft
FIRE CREEK

KLONDEX

- 38 drill holes (32,000 ft) in 2004 and 2005
- 2005 resource estimate showed 1.8M tons grading 0.328 opt Au (583,000 oz)
- Fourth phase drill program underway (30 holes for 40,000 ft)
- Recent high grade intercepts on Main and West veins at 700’ to 1100’ below surface including 24.8 ft of 1.22 opt Au
Midway Project, Nye Co., NV

Gold Zones

MW399
175’ of 0.349 opt Au

Discovery

MW402
MW398
MW404

Dauntless Zone

MW399

63-77

MW402

Rye Patch Fault

NW Mineral Trend

MW399

175’ of 0.349 opt Au

Midway Project, Nye Co., NV
Dauntless Zone Cross Section

MW398
MW404

Nautilus

Enterprise

0 100 meters

121
MIDWAY
MIDWAY GOLD
190 opt Au
MIDWAY
MIDWAY GOLD

• 6 gold deposits have been identified and eleven target zones are being tested
• Recent shallow intercepts include 175’ of 0.349 opt Au on the newly discovered Dauntless Zone and 135’ of 0.058 opt Au just north of the Discovery Resource
• Additional drilling to begin in December
MONTE CRISTO - GOLD SUMMIT

MacLean Pit – previous operator mined 300K tons at 0.1 opt Au
MONTE CRISTO
GOLD SUMMIT

Alteration & Geology

Cross Section below McLean Pit
Hole 12 – 4 ft (1.2 m) of 5.8 opt (180 gpt) Au
MONTE CRISTO
GOLD SUMMIT

McLean Lode

Visible Gold

Hole MCC 23 – 8.4 opt (261 g/t) Au
MONTE CRISTO
GOLD SUMMIT

• McLean Pit fault breccia ("lode") has been identified over 1,300 ft strike, 1,200 ft vertical, with an average width of 50 ft
• 46 holes completed, 28 had intercepts with > 0.1 opt Au (highest 7.6 opt Au)
• 43-101 resource evaluation underway by Mine Development Associates of Reno
Previous operators mined 230,000 oz Au at Northumberland
NORTHUMBERLAND

NEWMONT

• “We’re stuck at 2,200 feet”
  
  Driller’s comment overheard in International Hotel bar in Austin, Nevada

• “They’re on to a big one”

  Overheard at the Nevada Miners and Prospectors meeting at Louis Basque Corner restaurant in Reno, Nevada

• “No comment”

  Eric Lauha – Newmont Mining Corp.
PAN

CASTLEWORTH

www.castleworth.com

North and South Pan indicated resource is 17.9 million tons at 0.019 opt Au for 336,700 oz Au
Newly discovered “Black Stallion” area with best intercept 40’ of 0.101 opt Au from 0’ to 40’
PAN

CASTLEWORTH

• 16,100 ft (108 holes) drilled last 6 months
• Two new areas of mineralization (Black Stallion and Syncline) partially delineated
• Additional 6,000 ft (40 holes) in progress
• Resource analysis by Mine Development Associates expected in Spring 2006
Pequop Long Canyon

Yellow is +100 ppb in soils
PEQUOP

AUEx

Pequop

8 holes drilled
PEQUOP
AULEX
Long Canyon

7 holes drilled

0.54 opt
0.12 opt

10' of 18,434 ppm Au within 97' of 44 ppm Au
PEQUOP
AUEX

• 15 holes (6,400 ft) drilled in Pequop and Long Canyon areas in 2005
• Confirmed and added mineralization in Acrobat and Juggler zones at Pequop
• Channel samples and drilling tested 1/4\(^{th}\) (1,200’) of strike length at Long Canyon, and 5 of 7 holes had intercepts >0.15 opt Au
SPRING VALLEY

MIDWAY GOLD

www.midwaygold.com
SPRING VALLEY
MIDWAY GOLD
NEW TARGETS
Valley Breccia
West Diatreme
SPRING VALLEY
MIDWAY GOLD

• Four zones of Au mineralization have been discovered: Pond Zone (two breccia pipes), Porphyry Zone, and Sill Zone
• 47 of 72 holes have intercepts >0.01 opt Au
• Best hole to date has 215’ of 0.137 opt Au
• Currently drilling on new targets in Valley Breccia Zone and West Diatreme Zone
EXPLORATION ANNOUNCEMENTS

Minefinders Corp. – Clear property in Pershing County: 14 holes with intervals from 10 to 100 feet with average grades up to 0.068 opt Au
EXPLORATION ANNOUNCEMENTS

New Sleeper Gold – Sleeper mine area in Humboldt County: 10 to 20 feet with grades from 0.199 to 0.931 opt Au
EXPLORATION ANNOUNCEMENTS

Queenstake Resources – outlined a high-grade zone at least 2000 feet long at Starvation Canyon in the Jerritt Canyon district

50 ft of 0.513 opt Au
Tone Resources – Red Ridge property in Elko County:

80 feet of 0.037 opt Au
EXPLORATION ANNOUNCEMENTS

Miranda Gold-Newcrest JV – Redlich project in Esmeralda County:

10 feet of 0.68 opt Au
EXPLORATION ANNOUNCEMENTS

Royal Standard – Goldwedge property in the Manhattan district of Nye County: underground crosscut with

15 feet of 0.329 opt Au
EXPLORATION ANNOUNCEMENTS

Bullion River Gold – Antone Canyon in Nye County:

45 feet of 0.22 opt Au
EXPLORATION ANNOUNCEMENTS

Rare Earth Metals Corp. – Longstreet property in Nye County: 40 feet of 0.085 opt Au
Augusta Resources – Mt. Hamilton area in White Pine County: Shell deposit with 1.1 million tons @ 1.2% Mo, plus 0.5 million tons with 0.25 opt Au with Mo and W
Driven by high prices for many commodities, exploration is ongoing for other mineral resources, including Mo, W, U, Fe, Ti, Ga.
NEVADA EXPLORATION SURVEY 2004

• NDOM eleventh annual survey
  – Level of exploration activity
  – Factors influencing these levels
• Exploration and mining companies with projects or claims in Nevada
• 22 respondents from 100 questionnaires
  – All 22 exploring for precious metals
SURVEY TOPICS

- Exploration expenditures
- Geologists employed
- Number of claims held
- Breakdown of exploration expenditures
- Factors influencing activity
- Type of reserve replacement
- Overall attitude toward exploration
NEVADA EXPLORATION EXPENDITURES 2004

Expenditures in Dollars

Number of Respondents

<table>
<thead>
<tr>
<th>Expenditures in Dollars</th>
<th>Number of Respondents</th>
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<tr>
<td>0-9,999</td>
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</tr>
<tr>
<td>10,000-99,999</td>
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</tr>
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<tr>
<td>1,000,000-9,999,999</td>
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<tr>
<td>10,000,000 or more</td>
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TOTAL EXPLORATION SPENDING 2004/2005

Dollars (Millions)

<table>
<thead>
<tr>
<th></th>
<th>Actual 2004</th>
<th>Projected 2005</th>
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<tbody>
<tr>
<td>Nevada</td>
<td>79.7</td>
<td>111.9</td>
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<tr>
<td>Rest of U.S.</td>
<td>9.5</td>
<td>12.7</td>
</tr>
<tr>
<td>Rest of World</td>
<td>348.7</td>
<td>378.6</td>
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<td>503.2</td>
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<td>111.9</td>
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BREAKDOWN OF NEVADA EXPENSES 2004

ALL RESPONDENTS

- Actual Exploration: 75%
- Land Holding: 12%
- Permitting /Compliance: 5%
- Corporate: 8%

RESPONDENTS >=$1M

- Actual Exploration: 74%
- Land Holding: 12%
- Permitting /Compliance: 5%
- Corporate: 9%

RESPONDENTS <$1M

- Actual Exploration: 54%
- Land Holding: 23%
- Permitting /Compliance: 7%
- Corporate: 16%
ACTIVE CLAIMS & GOLD PRICES, 1982-2004

NOTE: Claim data from the BLM Public Land Statistics
FACTORS INFLUENCING ACTIVITY 2004
ALL RESPONDENTS

- Existence of Favorable Geology
- Commodity Prices
- Announcements of New Discoveries
- Actual Length of Permitting Time
- Uncertainty of Permitting Timeframes
- Uncertainty of Mining Law Reform
- Federal Claim Maintenance Fees
- Wilderness Study Areas/ACEC
- Changes in Foreign Mining Law
- Land Exchanges/Withdrawals

Level of Importance

- NOT MUCH
- SOME
- A GREAT DEAL
OPTIMISM INDEX 1994-2004

- COMPLETE OPTIMISM
- INCREASING OPTIMISM
- NEUTRALITY
- INCREASING PESSIMISM
- COMPLETE PESSIMISM

Legend:
- Green line: All Respondents
- Red line: Respondents >= $1 M
- Orange line: Respondents < $1
EXPLORATION SURVEY SUMMARY

• Higher spending (+15%) and more new claims filed (+39%) in 2004 over 2003
• Nevada exploration projected to increase 40% - $79.7M (04) to $111.9M (05)
• Worldwide exploration projected to increase 15% - $437.9M (04) to $503.2M (05)
• Exploration geologists employed projected to rise from 123 (04) to 144 (05)
EXPLORATION SURVEY SUMMARY

- 75% of budgets spent on direct exploration
- Active claims rose 19% from 2003 to 119,050 in 2004, and new claims filed rose by 39%
- Most important factors influencing activity continue to be favorable geology and commodity prices
- Domestic exploration - 75% optimistic, 25% neutral, and none pessimistic
Nevada is a **really great** place in which to explore for and mine gold, silver, and other mineral commodities.
The Fraser Institute, in its 2004/2005 survey of mining companies, rates Nevada first in terms of both mineral potential and policy potential. Its composite policy and mineral potential index has:

**Nevada = 98 out of a maximum of 100**

Western Australia, Quebec, Ontario = 81
Chile = 77
Alaska, Peru = 74
**British Columbia, China = 66**
Arizona = 62
Nunavut = 55
Saskatchewan = 50
California, Idaho, Alberta = 42
**Wyoming, Washington = 38**
Minnesoata = 31
Wisconsin = 21
Zhimbawe = 13
Oregon – not listed
Ten Top Reasons to Explore in Nevada

1. Great geology and potential

2. Many large producing mines, including high-grade, underground mines

3. Mines operated by the leading international companies
4. Regulatory system with recent examples of rapid permitting

5. Excellent infrastructure (roads, drillers, supplies, assayers, hotels, etc.)

6. Large areas open to exploration on BLM lands
7. Dry climate and year-round access in many areas
8. Network of knowledgeable exploration geologists, organizations, and agencies (Geological Society of Nevada, Nevada Mining Association, Nevada Division of Minerals, Nevada Bureau of Mines & Geology, Ralph J. Roberts Center for Research in Economic Geology and other units of the Mackay School of Earth Sciences and Engineering, building on the tradition of the Mackay School of Mines)
9. Recent discoveries and new mines
10. No malaria, black flies, moose, polar bears, desert death adders, or crocodiles (just elephants).
There is no truth to the rumor that Mormon crickets have been cloned to search for copper and gold.
Lizards, on the other hand, are more intelligent than crickets.
And, of course, burro’s kicking boulders is a proven geophysical technique.
The 2005 Symposium Volume will be published soon. The next GSN Symposium will be May 16-20, 2010.
Thank You!