The New Face of Mining in Idaho – a 2013 Update with Historical Perspective

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Mining in Idaho: 1860-1862

Discovery! **GOLD**

N. Fk. Clearwater – Feb. 20, 1860
Pierce - Sept. 30, 1860
Elk City – June 14, 1861
Florence – Aug. 12, 1861
Warren – July 22, 1862
Boise Basin – Aug. 2, 1862

*(George Grimes)*
Gold is where you find it.
- Luck beats science.
- It cleans up nicely.
  - Inert (non-reactive)
  - Eternal and Prized
  - Malleable, Ductile
- Very Dense (sg=19.3 g/cc)

- Au native element
- Also with Quartz (SiO₂)
- US measures gold concentration in troy ounces per short ton (opt)
- Rest of world uses metric (grams and ppm)
  - 1 troy ounce = 31.1 grams
Gold Discovery

- **Placer** – Au concentrated by Wind, water
- **Gold (Au)** = heavy native element
- **Lode** – vein in rock (hard rock mine)

Modern discoveries take advanced technology and lots of money!!!
Two Types of Early Mining

- **Placer** (gold pan, sluice, hydraulic mining)
- **Hard Rock** (underground, lode)

Sunshine mine, Yankee Lode, probably late 1880s

Requires Crushing and Processing
ARRAstra

Add horse, mule or person

Used mercury and later cyanide to recover gold
Gold Hill Area, view northwest, ca. 1900. Photo courtesy of the Idaho Historical Society (Photo 72-194.12).
Gold Hill Mine: Today’s Reworking

Cable Dumps, Gold Hill mine, 2002

Shaft Site with Water in Front; Dump area Cleaned off in Back, May, 2012. Work by Gold Hill Mines
Idaho Gold District Historic Production (troy ounces Au)

Pierce (1860): 385,000 ounces
Florence (1861,1896): 1,000,000
Elk City Area (1861): 832,000
Warren (1862): 906,500
Murray/CDA (1884): 439,000
Thunder Mtn. (1896): 17,500
Leesburg (1863): 271,000
Yankee Fork (1876): 266,000
Boise Basin (1861): 2,300,000
Atlanta (1863): 385,000
Silver City (1863): 1,000,000
Yellow Pine (1914): 310,000

Modern (1978-2004):
Silver City: 612,186
Leesburg: 612,729
Yellow Pine: 341,958, large resource
Yankee Fork: 208,284
Thunder Mountain: 80,865
Silver Discoveries

- Bayhorse 1872
- Yankee Fork 1875
- Warm Springs 1886
- Mineral Hill 1879
- Silver City 1863
- Texas 1904
- DeLamar 1878
- CDA 1884

Geologic Map of Idaho

Igneous Rocks
- Yellowstone Volcanics
- Idaho Volcanics
- Granite

Sedimentary Rocks
- Snake River Basalt
- Columbia River Basalt
- Chattis Volcanics
- Diorite
- Idaho batholith
- Seven Devils Group

(Point Placer Formation)

(contact)

(fault)

(thrust fault)
Bayhorse: mining park and ghost town

MILL AND EQUIPMENT

CHARCOAL KILN – FOR SMELTER
The Fabulous Coeur d'Alene Mining District
Silver Valley: 1884-2012:

- One of Top 5 Global Ag Producers (1.2 billion tr. oz.)
- Wealth to Build Spokane
- Metals for War Efforts
- Labor and Mining History
- Silver is primary commodity

Silver: 38,267 metric tons (1,230,298,535 tr. oz.)

Lead: 7,653,169 metric tons
Zinc: 3,028,636 metric tons
Copper: 190,061 metric tons
Gold: 16.5 metric tons (529,955 tr. oz.)

Plus Antimony

From Wallace Mining Museum
One of world’s largest silver producers!
> 1,219 million troy ounces Ag since 1884 (37,929 metric tons Ag)
+ Pb + Zn + Cu + Sb
Quartz-siderite-sulfide veins in Precambrian Belt metasediments.
Over a mile deep.

2 Operating mines in 2012:
Lucky Friday and Galena

11/30/2012: Ag = $33.26/tr. oz.

Today, 8/14/2013: Ag = $21.74/tr. oz.
Geographic Sub-areas of the Bunker Hill Site

1 Pinehurst
2 Page (tailings pond, gypsum pond, and slag pile)
3 Smelterville
4 Kellogg
5 Bunker Hill Ltd. smelter complex
6 Central Impoundment Area (tailings pond, gypsum pond, and slag pile)
7 Page Pond
8 Smelterville Flats & alluvial valley
9 hillside slopes
Modern Idaho Mining

Note: 2013 locations mostly same as 2011-12.

ACTIVE MINES AND PLANTS  2011

INDUSTRIALS  2012

X = closed
Mining in Idaho is about a billion dollar industry – and is highly dependent on international prices as well as production levels. 

**Today: It’s all about money$**

**Comparison:** 2012 cash receipts for ID agriculture = $7.7 billion.

![Idaho Non-fuel Mineral Production (USGS) 2000 - 2011p](image)

- **Other**
- **Moly**
- **Silver**
- **Con. S&G**
Idaho 2010f: $1,183 million

Idaho 2011p: $1,287 million
MSHA order to clean Silver Shaft after fatal accidents in 2011. Workers being rehired by end 2012. Production to resume in 1st Q 2013. Silver Shaft currently cleaned to 5900 level; work on schedule.

2011 production: ≈ 3 million ounces Ag
2013 estimated production: ≈ 1.3 million ounces Ag

2013
Costs high at lower production, will take till Sept. to return to full production.

Jan. 2012

• Remove loose material (cement) from Silver Shaft.
• Construct water ring, metal brattice in shaft.
• Bypass on 5900 haulage.

Lucky Friday Shut Down all 2012, reopened Feb. 2013!
# 4 Shaft to extend from 4900 to 8800 level. Access deep discoveries of 30 vein system in Gold Hunter area.

Lucky Friday - #4 Shaft

- Upon restart of #4 Shaft construction, work is expected to focus on shaft sinking & station development activities
- Total project is 45% complete and 80% of major procurements have been ordered or installed
- Capital expenditures for 2011 were $42 mm for a total of approximately $90 mm invested to date
- Total project capital is expected to be approximately $200 mm

New Bypass Haulage on 5900 level – under construction; New power cable installation for Silver Shaft.

Sept. 2012 corporate presentation
**U.S. Silver & Gold**

- Operates Galena mine complex (inc. Coeur mine, Caladay)
- **U.S. Silver & Gold**
  - Galena mine complex
  - Drumlummon mine, MT

**2013:**
Reduced expenses, workforce

Production: 2.3 million oz. Ag in 2011
2 Mills – Galena (Cu-Ag)
Coeur (Pb-Zn)
LEAD ZONE

- Argentiferous galena, “blue rock”
- Ag/Pb ~ 1/1
- Recent Press Release – 8 DDH, 4900 level
- Widths of 10-100’ of 3-10 opt Ag, 3-23% Pb.
- Resource Target: 60 million tons, bulk mineable.

Targets: Lead Zone, Silver vein, 370 vein, etc.
Coeur Redevelopment
$ 5 million exploration budget in 2012

2013: Resource vs. reserve
High costs and lower prices
Sunshine Silver Mines Corp.
(Silver Opportunity Partners)

Silver Opportunity Partners (2010 bankruptcy purchase).
Small fire – Mid-Feb. 2012, put out but mine closed for 3 months.
Working on exploration and surface and underground refurbishing.
Rumors of drilling Sterling Tunnel, West Chance veins system.

2013:
Still Closed.
No word.

Sunshine mine: 360 million oz. Ag
Mo Thompson Creek mine

2013: Cut 100 workers, delayed stripping for next phase.

August, 2012 – wind fence
For coarse ore stockpile

Most scenic setting!

At $ 12/lb. Mo price; Aug. 2013 price is $ 9.30/lb.
Idaho’s 2nd most valuable commodity; (3rd in nation for Phos) Ore >$ 200 million value.
### Phosphate Rock

- **Fertilizer**
- **Elemental P**

### Price of Phosphate Rock Concentrate

**30-32% P₂O₅ FOB Morocco and FAO Food Price Index (2002-2004=100)**

**Stonegate Agricom, 2012**

#### U.S. 21-Year Phosrock Concentrate History

<table>
<thead>
<tr>
<th>Year</th>
<th>Production</th>
<th>Grade</th>
</tr>
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<tbody>
<tr>
<td>1990</td>
<td>46.3 mt</td>
<td>30.7% P₂O₅</td>
</tr>
<tr>
<td>2011</td>
<td>28.4 mt</td>
<td>28.7% P₂O₅</td>
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#### Graphical Representation

- **FAO Food Price Index**
- **Phosphate Rock Concentrate Price**

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**Agrium Phosphoric Acid Fertilizer Plant, Conda**

**Monsanto Elemental P plant**

**Fertilizer also made at Simplot’s Don Plant, Pocatello**
Simplot: Dairy Syncline (2133 acres of FS lands). Baseline data collection, proposed land exchange. DEIS 2014?

Agrium: Rasmussen Valley (420 acres, mixed) DEIS in 2013.

Agrium: Husky/N. Dry Ridge (1051 acres), scoping, drilling. DEIS 2015.

Monsanto: N. Caldwell Canyon, exploration drilling.

2013: In permitting stage

Paris Hills: Phosphate Mineralization
Cross Section, Looking West

- Deposit is uniform and predictable – Strike length of >3.2km
- Mine plan: Room-and-pillar, cross-seam mining
- Mining equipment: Continuous miners typically used for coal seams

Lower Phosphate Zone
Mineral Reserves*

<table>
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<tr>
<th></th>
<th>Tonnes (millions)</th>
<th>Grade (% P₂O₅)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proven</td>
<td>5.2</td>
<td>30.0</td>
</tr>
<tr>
<td>Probable</td>
<td>4.8</td>
<td>28.8</td>
</tr>
<tr>
<td>Reserves</td>
<td>10.0</td>
<td>29.4</td>
</tr>
</tbody>
</table>

*Source: Mineral Reserves for the Lower Phosphate Zone were prepared as of March 26, 2013 by Agapto Associates Inc., an independent geological and mining engineering consulting firm based in Grand Junction, Colorado. Leo Gilbride, P.Eng., Vanessa Santos, P.Eng., and Gary L. Skaggs, P.Eng., are the qualified persons as defined in National Instrument 43-101. Additional information is available in a Technical Report on the Paris Hills Phosphate Project filed on SEDAR by Stonegate on March 26, 2013. Additional details are shown in the following pages of this presentation.
Very Busy Year
Some additional recon
not shown
Au - especially
Ag, Base and Alloy
Metals also
Several big $ advanced projects (NW development session)
Investor climate?

2013 – much slower
STIBNITE: World War II source of tungsten, antimony, mercury and gold
Midas: Golden Meadows Project

Lotsa core! Lotsa gold! Lotsa granite!

Homestake Pit, mined & reclaimed by Hecla in early ‘90s. MGI-12-307 geotech hole 15 m of 12 g/t North end of Homestake.
Yellow Pine Deposit

- 1938-52 produced ~0.4M oz gold plus significant antimony & tungsten
- Significant historic work by:
  - Bradley Mining, Bureau of Mines, Ranchers, Hecla, Canadian Superior, Barrick
- 46,991m of drilling (507 holes)
- 2012 infill & step-out drilling underway
  - Targeting in pit unclassified material
Formation: Idaho Cobalt Project

On hold due to lack of financing and low cobalt prices

Lining tailings waste rock facility

Admin Bldg.

Berms at storage pad
November – JV with ISR Capital (Owyhee Gold Trust LLC)
Polymetallic replacements/skarn
UG – Laxey Portal recollared and moved 30’. Waiting on MSHA approval to continue.
Plan UG drilling, evaluating mill design.

2013: Working away with private financing on private ground
Leesburg, Idaho (Lemhi County)

1867 – 1920’s: ~270,000 tr. Ounces Au

F.B. Sharkey – 1866 Gold Placers on Napias Creek

1868: 2000 people

Idaho State Historical Society, 63-160-83 Leesburg Placer
Modern Beartrack mine (lode source for Leesburg Placers)
Meridian Beartrack Reclamation

NORTH PIT & WASTE PILE - 2013

NAPIAS CREEK DREDGE PILES - 2013
All opinions and forecasts are those of Virginia Gillerman, *not* the Univ. of Idaho or IGS.

Comments include forward-looking statements that are speculative and may not come true.

Future depends on metal prices, global economics, plus regulatory process.

No Idaho mines, no mining related jobs or revenue.

Geology is critical but economics trumps it.

Historic legacy issues are being dealt with, let’s move on.

Need better education for all.

NGOs need to understand more of the science, technology, and economics of mining.

Industry needs to acknowledge and support the environmental regulators and public good.
Idaho Geological Survey NEW state geologic map:

- 1:750,000 scale
- 2012
- First-class map for first-class rocks.

TO ORDER -

www.idahogeology.org

Thank you.
Any editorializing is mine, not the Survey’s, however data on mining is part of the IGS’s designated role to provide mining report for the state. Title is Mike Murray’s. The ultimate new face is up to the public and policymakers.

Gold and other metals and industrial minerals reflect Idaho’s geologic history. In few years after 1860, prospectors staked many camps, the largest district, Boise Basin, gave rise to the city we are in.
In short, finding and utilizing gold requires less technology than most metals — plus it is prettier, and that is why it has been valued over the millenia.

Your vision of the old style, grizzled prospector with gold pan is correct. These early discoveries were placer gold and some districts, including Elk City, Florence, and Warren — and later the Boise Basin, became some of Idaho’s most productive mining areas in the late 1800’s and early 1900’s.

Hard Rock requires crushing and processing:
- Arrastra
- Stamp Mill
- Modern

Concentration:
- Gravity, Amalgamation (Hg), Cyanide, Flotation
Nice model of stamp mill next door in Idaho Museum of Mining and Geology.

Both these methods were simply used to crush rock to liberate native gold. Then had to add native mercury to amalgamate with the gold (also used for fine placer gold). Would collect amalgam and then burn off mercury as vapor to recover gold. No EPA or regulations. Not recommended for home use. Hg very toxic and can be absorbed through skin or vapors inhaled. Most cases tried to recover and reuse mercury (liquid) by condensing it (as it still). Very expensive and very heavy to transport to the camps. Some spills did occur and mercury contamination in creeks is locally an issue (esp. in Alaska).

Later (1930s) switched to cyanidation which is widely used today.
Remining is a type of reclamation. If done properly, it can improve ecosystem and habitat.

From Idaho Geological Survey Map 1 and IGS records of modern production.

Total: About 12,408,106 troy ounces gold. For reference, Nevada has several individual mines with multi-million ounce production and total over 100 million ounces. Geologically, Idaho is silver-rich. But gold still shaped much of early history.

Idaho should be the silver state.
By 1880, both Bayhorse and nearby Clayton had 30-ton smelters. Needed imported coke (from Pennsylvania) or local charcoal (1882). Ketchum also had smelter. In short, mining very important in Idaho’s first 100 years. Beehive kilns built to make suitable charcoal. 48 men provided 180,000 bushels of charcoal to maintain smelting operations. Bayhorse had 300 people, but 1888 was Bay Horses last full year. Ramshorn was largest mine. Many ups and downs. See Wells. Also Mitchell IGS Staff Report S-99-8, History of the Mines in the Bayhorse Area, Custer County, Idaho.

“1920. Ramshorn largest producer in district. Gross value of ore was $140.77 per ton, total mining costs were about $16 per ton, and transportation and treatment costs were $31.65 per ton. Generated electricity from own water powered plant.”

Vickie has ten companies operating Ramshorn from 1918 to 1981. Typical

The Coeur d’Alene district we know today is actually a general name for 10 mining districts that comprise the area. One of these was the Coeur d’Alene district and it was not one of the more productive mining areas. The others were the Eagle, Summit, Union, Beaver, Lelande, Hunter, Placer Center, Evolution and Yreka.
One of top silver producers in world. Mexico, Bolivia, Peru other historic top producers. More recently big mines in Australia, Canada, US as well. Silver Institute estimates 2012 global silver production at 787 million tr. ounces, with much byproduct production from Pb-Zn mines.

In comparison, Comstock Lode (Virginia City, NV) produced about 200 million tr. ounces of silver, but 8.3 million ounces gold (1859-1986, mostly pre-1880). Again, lots of production in earliest years.
Today, Bunker Hill Superfund site is one of most visible results of Idaho’s mining. Great restoration. Go take a look.

2 “world class” districts (CDA and Phosphate) are where most of real mining takes place. Plus Thompson Creek and small industrial mines. New Face of Mining in Idaho: Two districts but only a few large mines. Industrial markets starting to stabilize in 2012 after recession in 2008-9. Many operations hit hard, esp. those associated with housing industry and construction.
Huge effect of molybdenum. Prices more volatile than production level at Thompson Creek. Interdependent.

Hecla and their contractor spent all 2012 powerwashing the Silver Shaft – about 6000 feet deep. Followed rock burst in main access tunnel in December, and two fatalities in accidents earlier in year. MSHA ordered mine shut down in order to remove all loose material from shaft. Primarily cement leaked out of paste fill system. 110 miners laid off. A big blow to local residents in the Silver Valley. Several subprojects for safety.

Completion of Silver Shaft clean up and installation of new power cable in early 2013, recommence # 4 development work. Several other projects under scrutiny (ventilation improvements, mill improvements, Star mine exploration, using 3rd compartment on Silver Shaft for hoisting).
Operates Galena mine complex (inc. Coeur mine, Caladay).
U.S. Silver & Gold
Galena mine complex
Drumlummon mine, MT
Production: 2.3 million oz. Ag in 2011
2 Mills – Galena (Cu-Ag)
Coeur (Pb-Zn)

2013 update: Lay off of 100 employees due to high costs and lower prices.
Combination = well-funded, growth oriented precious metals producer.
Drummlummon mine is epithermal Ag-Au mine
Both underground and lots of exploration property and targets.
Sprott Asset Management LP = large shareholder of both
US Silver shareholders received 0.67 US Silver & Gold shares per US Silver share
RX Gold shareholders received 0.109 shares in new company per RX share.
Thus US Silver shareholders control 70% of new company.
Combined production base 2.7 million oz. Ag and 26,500 oz. Au annually.

Targets: Lead Zone, Silver vein, 370 vein, etc.
Coeur Redevelopment
$ 5 million exploration budget in 2012

LEAD ZONE
- Argentiferous galena, "blue rock"
- Ag/Pb ~ 1/1
- Recent Press Release – 8 DDH, 4900 level
- Widths of 10-100’ of 3-10 opt Ag, 3-23% Pb.
- Resource Target: 60 million tons, bulk mineable.

2013: Resource vs. reserve
High costs and lower prices

Lead Zone – recognized years ago but never pursued. New management more bullish on it. 750 prior drill holes. Lower grade disseminated and stringers of galena with linear zones of high grade. BIG: extends from 2400 to 5200 levels, strike between 1200 and 3600 feet long and apparent widths between 200 and 400 feet.
Slide 24

In “Quiet Period” with hopeful IPO when market improves. About 40 people working there.

Slide 25

2013: Mo prices dropped $3 per pound in last year. Aug. 12, 2013: Moly oxide = $9.30/poundMo
August, 2012: Largest circle perimeter wind fence in North America, and highest (60 or 90 feet, depending on topography). Cost $2.4 million. Major use is for corrosion-resistant steel such as used in oil and gas pipelines and equipment. Also stainless steel in industrial plants and tanker ships. Daily throughput of ore at the mill averages close to 28,000 tons per day. Most of the molybdenum disulfide concentrate produced at the mine is further processed into technical grade molybdenum oxide at the Langeloth Metallurgical Facility in Pennsylvania.

In February 2011, Thompson Creek announced new estimates for mineral resources and reserves (see table below).

The reserves and mine life calculations are as of January 1, 2011 and assume a molybdenum price of US$12 per pound and updated costs. Click here to view the 43-101 technical report.
dated February 9, 2011 on the mineral resources and mineral reserves estimates.

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3 large processing plants (3 major companies): Phosphoric Acid fertilizer, Elemental Phosphorus
Blobs = mines. 3 in active production, 1 new one in construction, + exploration
Administered by BLM as non-energy leasable mineral. Federal, state and private land.

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Though slightly lower than a year ago, phosphate fertilizer prices remain strong – and as long as world food production is a priority, phosphate, an essential ingredient of fertilizer looks good.
Mines: leases from feds and state, as well as private land.
3 companies, 3 plants: 2 fertilizer, 1 elemental (Monsanto, Roundup).
Plants employ 400 people each approximately.
Monsanto plant running at near-capacity, so demand pretty good.
Have not done full update for 2013, but overall, agricultural commodity prices more steady than metals. Stable industry. Also major legacy issues due to selenium – another problem not realized 30 years ago and made worse by historic practices (approved by government).

Near Bloomington. Paris Hills geology: Phosphoria (Meade Peak member, same as in north), on overturned limb. Two zones. Lower one is higher grade. No longer looking at V zone. Evaluating underground mine scenario – 14 year mine life at 10 million tons. Grade 29.4% P2O5. 2012 – drilling geotech holes and monitoring wells. Open house information meetings for locals.

2013: Some of these projects gone. Most doing much less work, though my full survey has not yet been done. Mining industry doldrums (down cycle). Cook and van Eden (Reno talk, Aug. 2013, reported on Mineweb): “financial sector has pretty much abandoned mining, in particular mining exploration, as fund managers chase after the next investment flavor-of-the-month.” Mining is really a lousy business. Affecting the poor villages in Africa as well as the junior companies and geologists in Idaho and Nevada. Very risky and very speculative. Very hard to find deposit
that will actually make money. Lower metal prices and global industrial downturn is only part of the problem.

Very busy year, some of you already heard the highlights in yesterday afternoon’s session on Exploration and Development Projects in Pacific NW. Will repeat some of that and add others. Hope you noticed that the bulk of Wednesday session’s advanced projects were in Idaho. Obviously the high precious metal prices influenced the targets. Historically Idaho has several large placer gold districts – time to re-examine those. Roughly from N to S.

Currently Idaho’s largest gold exploration district, but of critical importance in World War 2 for strategic antimony and tungsten. W in steel and Sb is fire retardant and used in other chemical processes. Wells (1983) cites: 1932-52 Stibnite mines $24 million in Sb and $21 million in W. Many former residents recall growing up in Stibnite with fondness.
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See website for press releases and more details. Nov. 21 announcement shared this one from Yellow Pine area step out drilling intersected new high grade zone. Big problem will be finding unmineralized ground for facilities. Structurally controlled mineralization in another major “Idaho shear zone” configuration. Hosted in Idaho Batholith and roof pendant metasediments and calc-silicates, at least partly of Paleozoic age.

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2013 – much reduced level of drilling activity. Forging ahead with analysis of much valuable historic data and doing modest drill program, plus permitting activities. Disclaimer: (inc. funding Survey research on geology).

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May be great tale of collaboration with ICL and environmental groups (Joe and John will discuss it) but for now – no actual mining. Note 8-year cobalt price graph. Typical. Delays over the years made financing difficult.

In addition to various construction work at mine and mill site in Lemhi County. Also drilled monitoring wells, and worked on new facilities at Cobalt Production Facility – i.e. the hydrometallurgical refining complex, outside of Kellogg, Shoshone Co.
Thunder Mtn. Gold has large land position on mostly private ground at South Mountain in Owyhee Co. Historic underground workings on massive sulfide replacements and skarns. Seeking financing to explore and develop it. In November, finalized agreement with ISR Capital (incl. $1 million buyin and $2 million work commitment to earn 25% interest in South Mtn.) Wasted no time going underground – Recollared Laxey Portal, moved it over a bit, excavated through cave. Will spend winter drifting and setting up ug drill stations to chase high grade ore down. Old-timers left a bunch. Pb-Zn-Ag plus nice gold credit.
FB Sharkey and his 5-man party set off from Deer Lodge, MT, in June, 1866, to explore country to S. Reached Napias Creek area in July and found good-paying gravel above bedrock of creek. Mined a few years and then switched to cattle ranching. Like others, they came for gold and decided to settle in the area. 1883 Sharkey located the Copper Queen mine off Agency Creek. Produced $100,000 by 1910. (Lemhi Pass REE-Th district, active exploration)


For the extent of mining operations and discoveries that first fall, James Henity, writing from Leesburg on January 2, 1867, gave a clear picture: “I will give you my opinion of this camp. I think it will be the best and largest camp ever struck in the country outside of Boise Basin. There have been no very large strikes made yet, but the country as far as prospected thoroughly will pay well. We have eight large districts, two of which have been struck since Sam left. These diggings were struck late in the fall and there have been no merchants or grub here, so men have had no time to prospect until after snow fell. The gold is of a course order and runs nineteen dollars and seventy cents per ounce. The largest piece was picked up in Bear Track District weighing $15.75, These diggings are seven to ten feet deep, with three feet of gravel. Prospects are from five cents to three bits to the pan.”
Mined from about 1995 to 2003
Produced about 600,000 ounces of gold – Meridian Beartrack mine
Au at about $350 per ounce then. Still made money – good operation
and simple, low costs. Heap leach; grade about 1 g/t, 26 million tons with
>90% recovery.
pH of pit lake is 8 ½ and has a bit of As. Treated with NaOH.

Won BLM Hard Rock Mining National reclamation award. Prior to mining,
company started reclaiming old dredge piles that disrupted Napias Creek
drainage. Today, trees growing and looks real nice. Open to public as
recreational sites.
OPINIONS of Virginia Gillerman:

Boutique mines?
Smaller, high grade operations on private land – in part because of economics, but also due to permit delays.

Foreign competition will increase.
Government regulators are poorly supported. Both industry and NGOs would benefit from stronger and better financed professional regulatory staff and speedy, but certain rules.

Emphasis on litigation is great for lawyers, but a waste of much corporate and public resources. Need more science and engineering. Need collaboration.

NGOs need to understand more of the science, technology and economics of mining; industry needs to acknowledge and support the environmental regulators and public good.

Historic legacy issues do and are being dealt with and now they mostly cloud the future; let’s move on.
**Reminder:** Check [www.idahogeology.org](http://www.idahogeology.org) to order your copy of Idaho’s new state geologic map. Also find out about other mapping projects, look for oil and gas and mine records, past mining reports, and see who to contact about geology, geothermal, aggregate, mineral deposits and other topics in your area.

Thank You.