# New Mine Development Scorecard

<table>
<thead>
<tr>
<th>Start, 91</th>
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</tr>
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<tbody>
<tr>
<td>Beartrack</td>
<td>X</td>
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<td>Black Pine</td>
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<td>Buffalo Gulch</td>
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<td>Grouse Creek</td>
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<td>Stone Cabin</td>
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<tr>
<td>Yellowjacket</td>
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**Average: 333**
ENGLISHMENTAL AWARDS

Award
DuPont/Conoco
State

Winner
Cda Mines
Hecla
Simplot
Fmc
R. Nordstrom
Anschutz
Meridian
Ray Henderson
Bert Jefferies

Reclamation
IDAHO GEOLOGICAL SURVEY
Notes for Regional Developments Talk, N.W. Mining Association Convention, December 4, 1991

Tray 1 == Scenary and Prospect Slides (right)
Tray 2 == LOCATION MAPS (left)

Slide No.  Description

AA. REGIONAL DEVELOPMENTS, IDAHO, 1991

1. IGS Logo. Good Afternoon folks. Welcome to the 1991 regional developments session on Idaho. Before I start, I would like to thank Earl Bennett for his help in preparing this talk.

BB. NONFUEL MINERAL PRODUCTION IN IDAHO

2. Geologist Sampling Silver Veins, Sunshine Mine. Last year's value was over $350 million. Mining employs about 3000 persons. Major impact this year were very low silver prices around $4.00 per ounce and lower gold at $360 per ounce.

CC. COEUR D'ALENE MAP

3. Bunker Hill Bankruptcy Auction. The Bunker Hill company declared bankruptcy in January. They auctioned off all equipment and are in process of liquidating assets to pay $2 million in back taxes to county.

4. IGS Move with Forklift. Idaho Geological Survey acquired and moved into storage all the Bunker Hill mine maps, drill logs, and other geological files.

5. IGS Crew with Pallets. Quite a production, great crew moved 30 pallets of old mine records to preserve wealth of information on great Pb-Zn-Ag mine. Contact Coeur d'Alene Earl for more info.

6. Sunshine Mine. Sunshine Mining Company is in dire straits, though Sunshine Mine increased productivity and cut costs. They laid off 2/3 of workforce in June and cut production by 50%. Low silver prices and corporate financial problems are to blame.
7. **Coeur Mine.** ASARCO operated the Coeur Mine for owner, Coeur d'Alene Mines. The mine was closed in April due to low silver prices, putting 130 miners out of work.

8. **Galena Mine.** The Galena mine, formerly owned by Callahan Mining Company, now owned by Coeur d'Alene, who merged with Callahan. ASARCO operates the Galena which is still in production, but probably operating at a loss at $4.10 silver.

9. **Lucky Friday Mine.** In spite of dismal silver prices Hecla's Lucky Friday mine operated all year. Hecla Mining Company celebrated its 100th birthday this year. The Lucky Friday has been around 48 years and produced over 92 million ounces of silver in that time.

10. **Star-Morning Mine.** The Star Phoenix Mining Company filed for Chapter 11 bankruptcy in March. The closure cost 120 jobs.

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**PHOSPHATE MINES LOCATION MAP**

Luckily, it was a much better year in the Phosphate District of southeastern Idaho.

11. **Phosphoric Acid Fertilizers.** World-class phosphate reserve in SE Idaho, mines from Penn.-Permian Phosporia Fm. Process into two forms, phosphoric acid and elemental phosphorus. Simplot makes a wide variety of liquid and dry fertilizer products at its phosphoric acid plant in Pocatello.

1990 phosphate production: almost $100 million of raw ore.

12. **Superphosphoric Acid Plant, Simplot, Pocatello:** Simplot's Don Plant in Pocatello has many parts, including a superphosphoric acid circuit.

13. **Simplot Slurry Pipeline.** Simplot completed and dedicated this 30 million dollar slurry pipeline this fall. The 60 mile long pipeline transport the slurried ore from Conda into the plant at Pocatello. At Conda it connects with a 27 mile pipeline from the Smoky Canyon mine.

14. **Simplot Smoky Canyon Mine.** Simplot mines 2 million tons a year from the mine near the Wyoming border. Simplot and a partner recently purchased Chevron's fertilizer plant at Rock Springs, Wyoming, and mine at Vernal, Utah.
15. **FMC Plant, Pocatello (air view).** FMC produced 260 million pounds of elemental phosphorous at its plant in Pocatello, the largest of its kind in the world. Mining at the Gay Mine is in its final days, and FMC started construction on a new mine in Dry Valley. FMC is installing new $14 million scrubbers on its calciners to meet EPA radionuclide standards. The company has spent $60 million since 1975 on environmental cleanup at the plant and estimates it will put out another $40 million in the next 5 years.


17. **Enoch Valley Mine.** Monsanto gets its ore from their new Enoch Valley Mine.

18. **Kerr-McGee's Vanadium Extraction Plant.** Kerr-McGee runs this vanadium extraction plant with Monsanto's ferrophos, a type of slag waste. They produce 4 million pounds of vanadium a year. Kerr-McGee also had its problems with air pollution and spent 150,000 dollars on new scrubbers for the ammonia plant.

19. **Nu-West Fertilizer Plant.** Nu-West Industries is building a $45 million sulfuric acid and cogenerating plant at its Conda fertilizer plant. It should be operational next year.

20. **Conda Partnership Mtn. Fuels Mine.** NuWest mines 1.5 million tons a year of phosphate ore from Mountain Fuels lease in Dry Valley.

21. **Rhone-Poulenc Loadout.** Rhone-Poulenc Chemicals shipped 600,000 tons of phosphate ore this year from its new Rasmussen Ridge mine to its plant in Silver Bow, Montana. This loadout facility grinds and sizes the ore.

22. **N.A. Degerstrom Silver-Gallium Plant.** N.A. Degerstrom operated its byproduct silver-gallium plant in Soda Springs for a while, but equipment problems shut it down in August.
23. **Cyprus Thompson Creek Mo Mine.** Cyprus closed the mill from April to November and laid off 100 employees at its Thompson Creek molybdenum mine near Challis. They spent the summer stripping north and east sides of pit and taking 250' off high wall. Mine and mill reopened November 1 with full production of 26,000 tpd of ore, though at reduced workforce. Moly prices are at 13-year low of $2.15 per pound.

GOLD is the commodity of choice at Idaho's other mines.

24. **MinVen Gold Corporation, Stibnite.** MinVen Gold Corporation bought Pegasus Gold's interest in the Stibnite mine, after Pegasus settled a lawsuit with former owner, Pioneer Metals. Operator MinVen will turn out 30,000 ounces of gold this year and had an active exploration program.

25. **Hecla Yellow Pine Mine, Reclamation.** Hecla Mining finished mining at the Homestake Pit and started reclamation this year. They will produce about 15,000 ounces of gold this year, down from the 60,000 ounces last year. Hecla also bought Grouse Creek deposit, that I'll talk about later.

26. **DeLamar Mine, Overview.** NERCO Mineral's DeLamar Silver Mine in Owyhee County had a busy year, mining from three pits, the Sommercamp, Glensilver, and South Wahl. Should produce about 36,000 ounces gold. They had minor startup problems in the newly expanded vat leach/Merrill Crowe mill, but still averaged about 3100tpd throughput. A major problem at the end of last year was the killing of a few birds in the tailings pond. NERCO implemented a round-the-clock hazing program and will be starting construction shortly on a new cyanide volatilization plant to eliminate the danger to wildlife.

27. **Idaho Gold Corp. Champagne Mine.** 1991 was the last full year of production at Idaho Gold Corporation's Champagne Mine west of Arco. With cash costs around $150 per ounce of gold, this open pit, heap leach mine has been a very low cost producer. Expected to produce about 20,000 ounces this year from South Zone and Champagne pits. Reserves will be depleted by next spring.

28. **Gold Pour, Yellowjacket Mine (Preacher Cove Mill).** U.S. Antimony started production this summer at the old Yellowjacket Mine southwest of Salmon. The deposit was drilled by Westgold in 1989. This year U.S. Antimony will pour about 2000 ounces of gold from Yellowjacket. The mine has about a 10-year life.
IDAHO also has a large number of small placer and underground mines that were operating around the state this year.

**INDUSTRIAL MINERALS MAP**

(many sites in rural parts of state, long-term)

29. **Hess Pumice plant near Malad.** Hess Pumice shipped 15,000 tons of pumice from its 30-person plant and mine near Malad. Hess has new market in Japan for ultra pure ground pumice abrasives. Producers Pumice and Aimcor mined pumice for lightweight aggregate.

30. **National Perlite, Malad.** National Perlite had to shut down their plant near Malad in October for air quality violations. The company still shipped 25,000 tons of bulk and expanded perlite this year. They are taking measures to remedy the dust problems and hope to be back in production during the first quarter of next year.

31. **Teague Mineral Products Mine.** Teague Mineral Products continued to mine zeolites in southwestern Idaho and take them over to the processing plant in Adrian, Oregon.

32. **Unimin Silica Sand Quarry.** Unimin Corp. had a good year, shipping about 100,000 tons of finished product from their washing plant and quarry near Emmett. The sand is used principally for glass-making and sandblasting.

33. **Oakley Valley Stone owner, Jim Burch, and Product.** Oakley Valley Stone is one of 3 companies that quarry the thin slabs of micaceous quartzite to use for decorative facing, paving stone, and decorative tiles. The quarries are all located south of the town of Oakley in southern Idaho.

34. **Emerald Creek Garnet.** Emerald Creek Garnet near Fernwood shipped 29,000 tons of finished garnet product in 1991. The company is the largest garnet operation in the U.S. The company was sold late in the year to a Canadian firm, Hawkeye Developments, for $ 2.5 million dollars.

35. **Ash Grove Cement.** Ash Grove Cement had a super year, producing at plant capacity, from their quarry and plant at Inkom in southeastern Idaho. Idaho's only cement producer, Ash Grove shipped 210,000 tons of cement this year. The operation employs 70 people.
NOTE that all the lime producers are indicated in blue on the map.

36. **Idaho Lime Plant.** Up north at Grangeville, Idaho Lime continued with breaking in procedures and exploration drilling for more reserves at its Slate Creek quarry near Lucille.

37. **Chemstar Lime Plant Groundbreaking.** Chemstar Lime Company broke ground in September for its new high Ca lime plant and quarry at Ten Mile Pass, west of Soda Springs. The 600 tons per day plant will have the lowest emissions of any lime plant in the nation.

We don't have a slide to show IDAHO TRAVERTINE, but they had an excellent year with sales up 50% over last year. Idaho Travertine finishes the new Idaho Power building in Boise, and the company is cutting 1200 tons of Table Rock Sandstone for new buildings at the Albertson College of Idaho in Caldwell.

Other industrial commodities produced in Idaho include scoria, clay, and of course, gemstones.

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**MINES IN DEVELOPMENT, 1991-- MAP**

38. **Beartrack.** Meridian Gold's Beartrack project at Leesburg west of Salmon is currently on held, principally due to gold prices. In May the Forest Service approved their Environmental Impact Statement, but negotiations for a wetlands permit occupied the rest of the year. Meridian geologists completed detailed geologic mapping and minor drilling along the Panther Creek Fault north and south of the known ore bodies.

39. **Pegasus - Black Pine.** Pegasus Gold Corporation finished construction of a new open pit, heap leach mine in the Black Pine range of southeastern Idaho. They bought the deposit from discoverer, Noranda. Pegasus redesigned the mine plan and leach pad configuration and had to repermit some things, but mining started December 1, and they should be pouring gold any day now. Full production will average about 50,000 ounces for 5 years.
40. **Buffalo Gulch Mine.** Idaho Gold Corporation's Buffalo Gulch mine near Elk City is on hold, waiting on a 404, or wetlands, permit.

41. **Hecla -- Grouse Creek Deposit, drill roads.** Hecla Mining Company bought out CoCa Mines in mid-year, and that purchase included the Grouse Creek project near Sunbeam on Jordan Creek. Preparation of a revised EIS and other permitting occupied the year, but Hecla also had a major drill program, including core for metallurgical testing. The project includes two orebodies, the Sunbeam and Grouse Creek, with over 8 million tons combined.

42. **Stone Cabin Mine, Florida Mountain.** Only four holes were drilled this year at NERCO Minerals Stone Cabin Mine project on Florida Mountain in the high desert of Owyhee County. The project, due to have a ten-year mine life, was on hold, waiting on a wetlands, 404, permit.

43. **Yellowjacket Mine.** I have already mentioned that U.S. Antimony opened a small mine this year at the old Yellowjacket district. They have been running about 150 tons per day at their mill and trucking the concentrates to the Preacher Cove mill for pouring gold.

44. **Development Scorecard.** Last year we said Idaho had six projects in the development stage, with production expected in 24 months. This year's tally shows 1/3 of those will pour gold by the end of the year. The others have been held up by soft gold prices and are Just Waiting On Their 404.

45. **Environmental Awards.** The state of Idaho annually honors those companies and individuals who have combined mining with environmental awareness.

**EXPLORATION MAP -- 1991**

Exploration activity in Idaho still centered on gold, though a few base metal projects were underway. Our count of advanced projects, those with drilling or development work, which is shown by the yellow dots, numbered 42, about half of last year's activity. We also noted a shift in locations of the hottest new areas.
46. **Salmon River Valley.** The area around Salmon was much quieter than last year, only a few small drill programs, and few newcomers.

Formation Capital did a lot of surface work. Atlas worked up at Musgrove Creek. Pretty Quiet.

47. **Bob Doler at Red Mountain.** There was more activity in central Idaho at Yellow Pine and Big Creek. Placer Dome drilled at Red Mountain. Kennecott had better success drilling out a gold zone at the old Moscow Mine west of Big Creek. Great Basin Exploration also active.

48. **Idaho-Almaden Mercury Mine.** The desert of southwestern Idaho hosts several classic, Basin and Range style, epithermal and hot spring precious metal deposits. AMAX is exploring the gold under the mercury opalite at the Idaho Almaden Mine east of Weiser.

49. **Blue Dog Prospect.** The Blue Dog gold prospect north of Weiser was drilled early in the year by Noranda, and is now rumored to be optioned to another major.

50. **Elton Modroo at Cartwright Canyon.** Sunshine Mining worked on another Tertiary sediment-hosted discovery with some really hot gold numbers, not too far from Boise, and up for JV.

51. **Newmont Drill Rig at Atlanta.** Finally, Newmont Exploration started the summer drilling deep RC/core holes to test the high grade, deep underground gold potential of the Atlanta lode. After about a dozen holes in Phase I, Newmont bailed out. Atlanta Gold Corporation raised the money on their own and currently have three rigs on the property.

**JUST ONE MORE DISCOVERY I'D LIKE TO PREVIEW.** That is the Idaho Initiative's Brand New Gold Discovery in North Idaho. I suggest you attend Earl Bennett's talk at _______ in the New Discoveries session Friday afternoon in the ________, and also see the poster display in the Trade Show at ________.

Thank you. Any questions, you can catch me in one of the hospitality suites later on.
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Slide 7  
Sunshine Mine,

Slide 8  
Bunker Hill auction

Slide 9  
IGS moving maps from bunker Hill to storage at CDA Mines building at the sawmill in Osburn. Right Louie Caputo, Left-Lauri____.
Slide 10

Moving Bunker Hill maps and records from BH to storage at CDA Mines building at Osburn.

Slide 11

Simplot acids and fertilizers at Don Plant near Pcatello
Slide 13
Super phos acid plant, Simplot, Don Plant, Pocatello

Slide 14
New Simplot slurry pipeline from Smoky Canyon to Pocatello.

Slide 15
Slurry line pump at Conda.
Monsanto elemental phos plant at Soda springs.

Enoch Valley mine, Monsanto
Slide 22
N. A. Degerstrom gallium/silver plant at Soda Springs

Slide 23
Thompson Creek pit.

Slide 24
Hecla reclamation at the Homestake Pit, Stibnite, ID
Slide 25

Idaho Gold Corp., Champagne Mine, Arco, ID

Slide 26

Pouring gold at U.S. Antimony’s plant at Preacher’s Cove, Yankee fork.

Slide 27

Hess Pumice, Malad, ID
Teague Minerals zeolites at /Succor Creek, Owyhee county. Bob Bartlett left, Earl H. Bennett right.

Unimin Corp, Emmett, ID. Silica sand pt.
Slide 31  James Burch, Oakley Stone quarry.

Slide 32  Ash Grove Cement plant at Inkom, ID

Slide 33  Idaho Lime plant at Grangeville, ID
Slide 34
ChemStar groundbreaking, 10 mile pass near Bancroft.

Slide 35
Looking northeast at ChemStar Lime site

Slide 36
Breaking ground for ChemStar Lime’s new plant at 10-Mile Pass near Bancroft.
Slide 37
ChemStar Lime groundbreaking

Slide 38
Looking SW at the Panther Creek fault from the Beartrack mine.

Slide 39
Pegasus Gold, crusher and leach pads under construction at the Tallman mine at Black Pine.
Slide 40

Buffalo Gulch mine near Elk City.

Slide 41

Drill road at Grouse Creek, Sunbeam, ID
Kurt Allen at outcrop of black shale at the Grouse Creek gold mine near Sunbeam.

Nerco, Inc., Canterra drill rig, Florida Mt. mine, Owyhee County, ID.

Yellowjacket mine, Office and equipment.
Slide 46

NEW MINE DEVELOPMENT Scorecard

Beartrack  Start, 91  Hold
Black Pine  X
Buffalo Gulch  X
Grouse Creek  X
Stone Cabin  X
Yellowjacket  X
AVERAGE 333

Slide 47

ENVIRONMENTAL AWARDS

Award      Buffet/Canosa
State      State
NECKLACE    Reclamation
            Wren
            Clark
            E. Nelson
            Anschutz
            Martin
            Ray, Recluse
            Bert Jefferson

Slide 48

Salmon River valley looking SE.
Bob Doler at Red Mountain near Yellowpine.

Idaho Almaden Hg mine, Weiser, ID looking at opal cemented sediments.

Bluedog mine, Weiser, ID