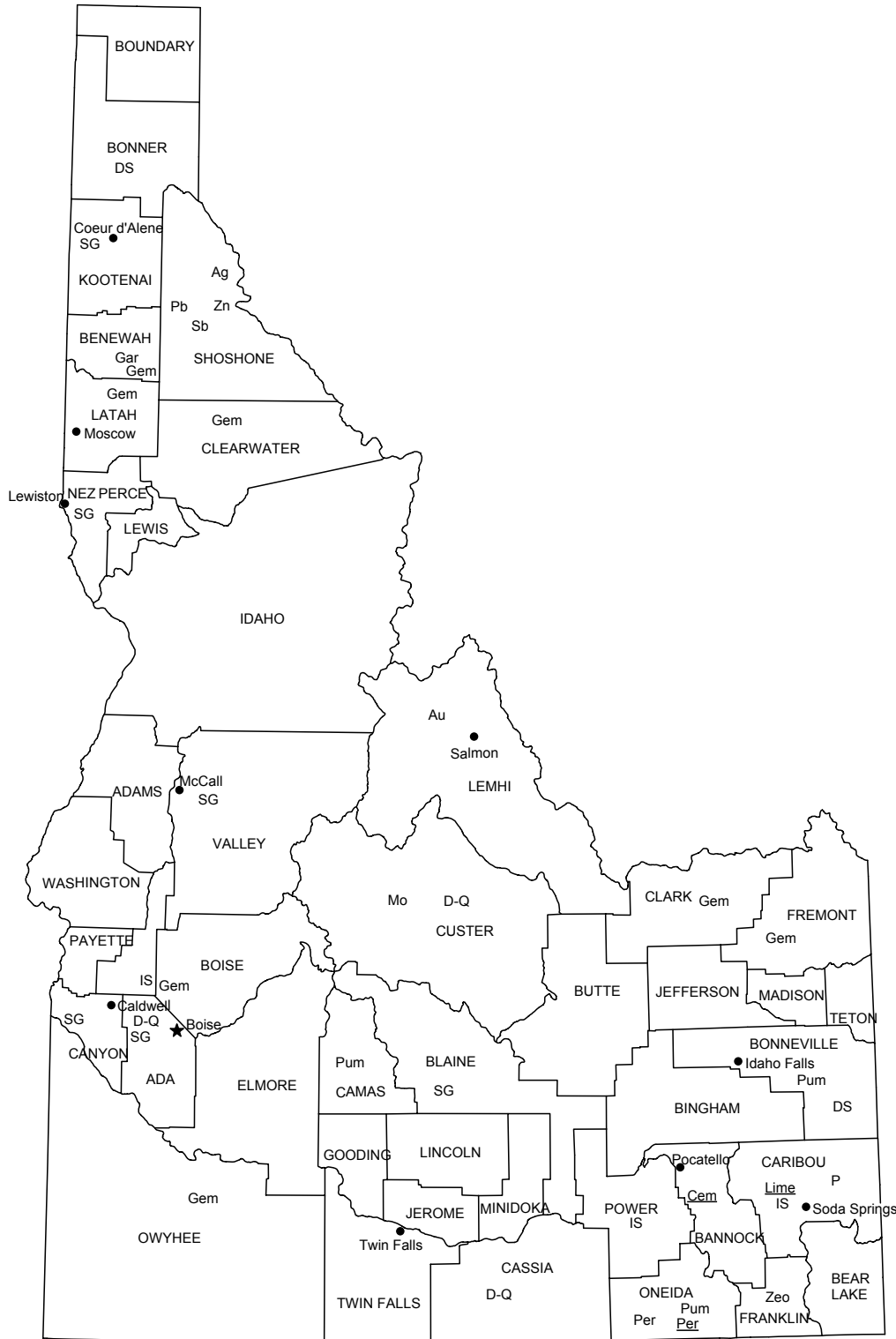


IDAHO



LEGEND

- County boundary
- ★ Capital
- City

MINERAL SYMBOLS (Major producing areas)

- Ag Silver
- Au Gold
- Cem Cement plant
- D-Q Dimension quartzite
- DS Dimension stone
- Gar Garnet
- Gem Gemstones
- IS Industrial sand
- Lime Lime plant
- Mo Molybdenum
- P Phosphate rock
- Pb Lead
- Per Perlite
- Per Perlite plant
- Pum Pumice and pumicite
- Sb Antimony
- SG Construction sand and gravel
- Zn Zinc
- Zeo Zeolites



THE MINERAL INDUSTRY OF IDAHO

This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the Idaho Geological Survey for collecting information on all nonfuel minerals.

In 2002, the estimated value¹ of nonfuel mineral production for Idaho was \$301 million, based upon preliminary U.S. Geological Survey (USGS) data. This was a 4.5% increase from that of 2001² and followed a 19.6% decrease from 2000 to 2001. The State increased to 35th from 37th in rank among the 50 States in total nonfuel mineral production value, of which Idaho accounted for about 1% of the U.S. total.

Phosphate rock, construction sand and gravel, silver, molybdenum concentrates, crushed stone, and portland cement, by value, were Idaho's leading nonfuel minerals. In 2002, industrial minerals accounted for nearly 75% of the State's total nonfuel mineral production value. In contrast, in 2000, industrial minerals accounted for about 57% of the State's total nonfuel mineral value and metals—copper, gold, lead, molybdenum concentrates, silver, and zinc—accounted for 43%. Industrial mineral production overall was down slightly from 2000 to 2002, while that of metals, especially for gold, molybdenum concentrates, silver, and lead, showed a significant decrease for the same time period. (Copper production and value in 2002 were up slightly from 2001.) Gold production was about 10% of 2000, while silver was about 45% below the 2000 level. Hecla Mining Co.'s Lucky Friday Mine (silver/lead/zinc/gold) near Mullan continued to operate at reduced capacity and the Formation Capital Corp.'s Sunshine silver mine near Kellogg remained on a care-and-maintenance basis. Thompson Creek Mining Co.'s large open pit molybdenum mine in Custer County experienced an increase in production and slightly increased overall prices compared with 2001, but production was still at about one-half that of 2000.

In 2002, increases, especially in the values of phosphate rock (with slightly lowered production), up more than \$15 million; molybdenum concentrates, up about \$10 million; and copper, up about \$4 million, offset decreases that occurred in other nonfuel minerals. The largest decreases were a \$9 million drop in lead

¹The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending upon the minerals or mineral products. Production may be measured by mine shipments, mineral commodity sales, or marketable production (including consumption by producers) as is applicable to the individual mineral commodity.

All 2002 USGS mineral production data published in this chapter are preliminary estimates as of July 2003 and are expected to change. For some mineral commodities, such as construction sand and gravel, crushed stone, and portland cement, estimates are updated periodically. To obtain the most current information, please contact the appropriate USGS mineral commodity specialist. Specialist contact information may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals/contacts/comdir.html>; alternatively, specialists' names and telephone numbers may be obtained by calling USGS information at (703) 648-4000 or by calling the USGS Earth Science Information Center at 1-888-ASK-USGS (275-8747). All Mineral Industry Surveys—mineral commodity, State, and country—also may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>.

²Values, percentage calculations, and rankings for 2001 may differ from the Minerals Yearbook, Area Reports: Domestic 2001, Volume II, owing to the revision of preliminary 2001 to final 2001 data. Data for 2002 are preliminary and are expected to change; related rankings may also change.

and a \$4 million decrease in gold. Industrial sand and gravel, construction sand and gravel, and zinc were down \$2 million or less each (descending order of change) (table 1). All other changes were small relative to these and had little effect on the overall total value.

In 2001, the largest increases were those of crushed stone, up almost \$8 million; phosphate rock, up about \$4 million; and industrial sand and gravel and lime, up more than \$1 million each. Gemstones had a relatively small, yet significant increase in value. But these increases were outweighed by decreases in gold, lead, molybdenum concentrates, and silver; their combined total decrease was about \$75 million, accounting for most of the State's drop in total nonfuel mineral value. Construction sand and gravel and dimension stone also had small decreases in value (table 1).

Based upon USGS estimates of the quantities produced in the United States during 2002, Idaho was first of three industrial-garnet-producing States, second in phosphate rock, third in silver and lead, fourth in molybdenum, sixth in feldspar and zeolites, and ninth in gold. While the State rose to fifth from sixth in zinc and to sixth from seventh in gemstones, it dropped to fifth from fourth in pumice. Additionally, the State was a significant producer of construction sand and gravel, industrial sand and gravel, and dimension stone and a modest producer of portland cement.

The Idaho Geological Survey³ (IGS) provided the narrative information that follows. Production data in the following text are those reported by the IGS, based upon its own survey and estimates. The data differ from some production figures reported by the USGS.

Idaho's nonfuel mineral industry had a mixed year in 2002. Higher gold and silver prices sparked a bit of renewed interest in precious metals exploration by junior companies, and molybdenum prices showed an erratic rebound from near record lows in 2001. Exploration interest in phosphate and construction-related materials remained strong, although the phosphate industry suffered additional job losses. According to preliminary data, Idaho's metallic minerals accounted for only 28% of the total value in 2002, down sharply from 43% in 2000. The industry suffered its fifth straight year of employment declines with only 1,800 mining jobs listed by the Idaho Division of Financial Management and only about one-third of those with metal producers. Production in the Silver Valley totaled approximately 230 metric tons (t) of silver from the two deep underground mines still operating in the world-class Coeur d'Alene District, but phosphate rock remained the largest value contributor to Idaho's nonfuel mineral production.

³Virginia S. Gillerman, Research Economic Geologist, authored the text of the State mineral industry information provided by the Idaho Geological Survey.

Exploration and Development Activities

The Galena Mine, operated by Coeur Silver Valley, achieved record production of 165 t of silver during 2002, an 18% increase over 2001. Average cash costs declined to \$4.25 per troy ounce because of the successful introduction of mechanized mining in selected stopes, especially along the 72 vein. The cost of deep mining and weak silver prices still forced a \$19 million write-down on the mine value at the end of 2002. Hecla's Lucky Friday Mine near Mullan continued to operate at reduced capacity but was able to add back some jobs because of effective cost-cutting measures and improved silver prices.

Molybdenum prices improved, giving Thompson Creek Mining Co. a better year at its giant molybdenum mine in Custer County. Production was about half of capacity; and about 100 employees shared the mining and milling duties. A fire on the 2,800-meter (m)-long mine-to-mill conveyor belt adversely affected the mine during Labor Day weekend, and operations were shut down for part of autumn. Contractors hired to do prestripping had to be laid off when production and prices fell. Lubricant-grade molybdenum remained an important value added product and supplemented the regular concentrate production.

New Jersey Mining Co. had several exploration projects in north Idaho. It drilled 1,700 m of core in 13 holes to test the gold-quartz vein system at the New Jersey Mine near Kellogg, and drilled five underground holes at the Silver Strand Mine. All five holes intersected the high-grade silver-gold veins, with one intercept of 1.6 m averaging 15.6 grams per metric ton (g/t) gold and 316 g/t silver. The company initiated permitting for a seasonal operation.

Camden Capital Corp. drilled the Petsite gold property at Orogrande held by Beartooth Platinum, formerly Idaho Consolidated Metals Corp. Drilling intersected the vein on which Cyprus Amax Minerals Co. had hit high-grade gold in previous holes. Near Gibbonsville in Lemhi County, a prospector used an underground drill from the surface to test for gold mineralization below the Moon Adit and conducted an IP (induced polarization) Resistivity survey in Johnson Gulch to the north. Core drilling intersected a zone of brecciated rock below the geophysical anomaly.

Formation Capital Corp. continued permitting activities for an underground cobalt-copper-gold mine at its Idaho Cobalt Project in the Blackbird Mining District of Lemhi County. The company purchased the Big Creek hydrometallurgical facility near Kellogg from bankrupt Sunshine Mining Co. at a bargain price. The proposed mine plan called for producing 1,500 t of cobalt annually and would create the Nation's only cobalt mine.

American Independence Mines and Minerals Inc. submitted a Plan of Operations to reopen the Golden Hand Mine near Edwardsburg in central Idaho. The Payette National Forest was preparing an environmental impact statement (EIS) on the project, which is situated on a cherry stem into the wilderness. PacRim Resources Ltd., formerly Barramundi Gold, worked to rebuild a collapsed mill building at the Rescue Mine near Warren. Atlanta Gold (a subsidiary of Twin Mining Corp.) drilled 1,200 m of core in 13 metallurgical test holes at its Atlanta project in Elmore County. Results will be incorporated into a final feasibility study for the proposed gold mine, where a

31 t of contained gold resource has been outlined in two pits.

Other small gold exploration projects around the State included Windjammer Gold at Florence; Juniper Rose, LLC, at the Rose Hill Mine on the Snake River; Portuguese Creek Management, LLC, at the young rhyolites near Gooding; and Kimberly Gold Mines Inc. in the Marshall Mountains. Nevada Contact did mapping and sampling on its War Eagle epithermal precious-metal property in the Owyhee Mountains and elsewhere in the State. Alchemy Ventures Ltd. maintained its exploration leases on the clay resource in Latah County, but the company spent the year regrouping and did only minor test work.

Poor market conditions in the phosphate industry caused additional job losses at J.R. Simplot Co. and Agrium Inc.'s fertilizer plants. Idaho facilities produced phosphoric acid fertilizers, purified phosphoric acid (PPA), and elemental phosphorus. J.R. Simplot's Smoky Canyon Mine was the largest producer, extracting over 1.8 million metric tons of ore. Pre-mining activities started on the newly approved Panel B and C expansion, and Simplot had an aggressive exploration program with drilling on the Manning Creek and Deer Creek leases.

Astaris LLC's Dry Valley Mine ceased operations temporarily at yearend because of the late 2001 closure of the Astaris (FMC) elemental phosphorus plant in Pocatello. Stockpiled ore will go to the new Agrium-Astaris Purified Phosphoric Acid plant, which opened in 2001, adjacent to the Agrium acid plant at Conda. Agrium was working on a plan for the North Rasmussen Ridge Mine expansion. Monsanto mined the final part of the South Pit at the Enoch Valley Mine and transitioned to the new South Rasmussen Ridge property, which supplied about one-third of the production in 2002. The company also explored its Trail Creek lease. Monsanto's plant in Soda Springs was the only domestic producer of elemental phosphorus, and the company celebrated its 50th year of operation and opened a new plant administration building in July.

Other industrial mineral production was fairly stable, although north Idaho's Emerald Creek Garnet Co. in Benewah County had to lay off 17 people because of poor market conditions late in the year. The industrial garnet producer is owned by WGI Heavy Minerals, Inc., formerly Western Garnet International Ltd. At Inkom in southern Idaho, Ash Grove Cement Co. agreed to install air pollution equipment at its cement plant. Hess Pumice Products Inc. of Malad had a good year. Idaho Minerals Co.'s perlite plant operated only sporadically. At Dubois in eastern Idaho, Thermocal Mines of Idaho, LLC, formerly E.J. Wilson and Sons, mined travertine from the Lidy Hot Springs deposit and was seeking new markets. Bear River Zeolite LLC added a new screening and grinding facility at its new zeolite mine near Preston in Franklin County, where it produced high-potassium clinoptilolite for numerous applications.

Decorative stone producers again enjoyed excellent market demand. L and W Stone shipped more than 18,000 t of variably colored argillaceous quartzite from its Three Rivers quarry near Clayton. The company was also revising its permits with the U.S. Bureau of Land Management. At least three companies quarried Oakley stone in south-central Idaho, and Table Rock Sandstone and International Stone quarried sandstone for landscaping rock in southwestern Idaho.

One of Boise's largest concrete producers, Monroc Inc., was sold to Staker and Parsons of Ogden, Utah, and renamed the Idaho Concrete Co. Like several other large concrete and aggregate producers in Idaho, the company belongs to CRH Oldcastle Inc., an Irish construction conglomerate.

Environmental Issues and Mine Reclamation

In August, the U.S. Environmental Protection Agency (EPA) signed the record of decision for a 30-year cleanup of the entire Coeur d'Alene River basin. Costs were estimated at \$359 million, and the process will be supervised by a new commission that includes local and State officials as well as a representative of the EPA. In southeastern Idaho, phosphate producers continued to work with the agencies on an areawide consent order for risk assessment and site-specific investigations of the hazards caused by selenium leaching from old waste dumps at reclaimed mine sites. The new mine expansions and improved reclamation methods now try to backfill the selenium-containing waste shales into the pit so that less is exposed to near-surface oxidation and ground water.

Final reclamation at the former Yellowjacket Mine in Lemhi County and the Black Pine Mine in Cassia County was essentially complete, and work at Meridian Gold Inc.'s

Beartrack Mine in Lemhi County was progressing well. Water management remained an issue at Hecla Mining Co.'s closed Grouse Creek property.

Government Programs

Though recently closed, the famous Sunshine silver mine in the Coeur d'Alene District was the subject of a training video on the 1972 Sunshine Mine fire disaster that killed 91 miners. The comprehensive film, produced by the U.S. National Institute for Occupational Safety and Health, debuted in Wallace in August to an audience of former Sunshine miners and their families.

The IGS released several new color geologic maps, including compilations for the Hamilton, Coeur d'Alene, Missoula, and Idaho City 1 x 2 degree sheets and a new map of Miocene to Recent faults. The IGS new mapping projects were underway in the Orofino area, the Wood River Valley, and the Twin Falls region as part of the STATEMAP cooperative program with the USGS. Inventories of inactive mine sites in the Challis region and Boise National Forest were also completed. The annual IGS field workshop for school teachers was held in the Salmon area in July. A review of survey activities and publications can be found at URL www.idahogeology.org.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN IDAHO^{1,2}

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	2000		2001		2002 ^p	
	Quantity	Value	Quantity	Value	Quantity	Value
Antimony	W	W	--	--	--	--
Gemstones	NA	411	NA	665	NA	645
Sand and gravel, construction	17,500	55,700	15,000	52,400	14,200	50,700
Silver ³	423 ^r	68,000 ^r	W	W	W	W
Stone, crushed	3,500	14,800	5,250	22,500	5,200	22,700
Zeolites	(4)	NA	(4)	NA	(4)	NA
Combined values of cement (portland), copper, feldspar, garnet (industrial), gold, lead, lime, molybdenum concentrates, perlite (crude), phosphate rock, pumice and pumicite, sand and gravel (industrial), stone [dimension granite, quartz, sand stone (2000), dimension quartzite and sandstone (2001-02)], zinc, and values indicated by symbol W	XX	219,000	XX	213,000	XX	227,000
Total	XX	358,000 ^r	XX	288,000	XX	301,000

^pPreliminary. ^rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined values" data. XX Not applicable. -- Zero.

¹Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

²Data are rounded to three significant digits; may not add to totals shown.

³Recoverable content of ores, etc.

⁴Withheld to avoid disclosing company proprietary data.

TABLE 2
IDAHO: CRUSHED STONE SOLD OR USED, BY KIND¹

Kind	2000				2001			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone	5 ^r	607	\$1,920	\$3.16	5	564	\$3,240	\$5.75
Shell	2	17	107	6.29	1	19	134	7.05
Granite	7	240	975	4.06	7	235	1,090	4.65
Traprock	24	1,990	8,960	4.51	40	3,710	14,700	3.97
Quartzite	5	495	2,020	4.07	3	371	1,580	4.26
Miscellaneous stone	16	156	774 ^r	4.96	9	355	1,680	4.74
Total or average	XX	3,500	14,800	4.21	XX	5,250	22,500	4.28

^rRevised. XX Not applicable.

¹Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

TABLE 3
IDAHO: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2001, BY USE¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregate (+1 1/2 inch):			
Riprap and jetty stone	W	W	\$5.07
Other coarse aggregates	105	\$393	3.74
Total or average	105	393	3.74
Coarse aggregate, graded:			
Concrete aggregate, coarse	W	W	7.17
Bituminous aggregate, coarse	126	669	5.31
Bituminous surface-treatment aggregate	38	182	4.79
Railroad ballast	W	W	9.97
Other graded coarse aggregates	13	111	8.54
Total or average	177	962	5.44
Fine aggregate (-3/8 inch):			
Stone sand, bituminous mix or seal	(2)	(2)	5.29
Screening, undesignated	(2)	(2)	4.24
Coarse and fine aggregates:			
Graded road base or subbase	2,260	8,590	3.80
Unpaved road surfacing	48	186	3.88
Other coarse and fine aggregates	142	866	6.10
Total or average	2,450	9,640	3.94
Other construction materials	(2)	(2)	3.53
Agricultural, poultry grit and mineral food	(2)	(2)	25.35
Chemical and metallurgical, flux stone	(2)	(2)	4.08
Special:			
Mine dusting or acid water treatment	(2)	(2)	25.35
Asphalt fillers or extenders	(2)	(2)	4.63
Unspecified: ³			
Reported	1,530	6,220	4.06
Estimated	530	2,100	3.96
Total or average	2,060	8,310	4.03
Grand total or average	5,250	22,500	4.28

W Withheld to avoid disclosing company proprietary data; included with "Other."

¹Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

²Withheld to avoid disclosing company proprietary data; included in "Grand total."

³Reported and estimated production without a breakdown by end use.

TABLE 4
IDAHO: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2001, BY MAJOR USE CATEGORY¹

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregates (including concrete sand)	1,220	\$6,840	\$5.61
Plaster and gunitite sands	17	115	6.76
Concrete products (blocks, bricks, pipe, decorative, etc.)	98	550	5.61
Asphalt concrete aggregates and other bituminous mixtures	788	3,000	3.80
Road base and coverings ²	4,010	12,700	3.17
Fill	506	1,550	3.06
Snow and ice control	73	424	5.81
Other miscellaneous uses ³	185	1,040	5.64
Unspecified: ⁴			
Reported	3,780	12,400	3.29
Estimated	4,300	14,000	3.21
Total or average	15,000	52,400	3.50

¹Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.

²Includes road and other stabilization (lime).

³Includes railroad ballast.

⁴Reported and estimated production without a breakdown by end use.