

THE MINERAL INDUSTRY OF ALASKA

In 1997, Alaska climbed to 17th from 21st (1996) among the 50 States in total nonfuel mineral production value,¹ according to the U.S. Geological Survey (USGS). The estimated value for 1997 was \$942 million, a nearly 54% increase from that of 1996. This followed a 13.9% increase from 1995 to 1996 (based on final 1996 data). The total value for 1995, as given in table 1, is artificially low because some data were withheld to avoid disclosing company proprietary data. The State accounted for about 2.5% of the U.S. total nonfuel mineral production value.

Overall, metallic minerals accounted for more than 93% of the State's total production value. A large majority of this was from zinc, lead, and silver production at the Red Dog Mine in northwestern Alaska and gold from the newly commissioned Fort Knox Mine near Fairbanks in east central Alaska. In 1997, substantial increases in the production and values of gold, zinc, and silver (in descending order of increase) accounted for most of the State's rise in value (*table 1*). Smaller yet significant increases also occurred in lead and construction sand and gravel; crushed stone also showed a small increase. Compared with that of 1995, the increased production values of lead, silver, and gold in 1996 more than compensated for decreases that occurred mostly in construction sand and gravel and crushed stone.

Based on USGS estimates of the quantities produced in the 50 States during 1997, Alaska remained first in zinc, second in lead, and one of the top three silver-producing States. The State climbed to fifth from eighth² of the 13 gold-producing States. Production of peat was not reported to the USGS, in part because of reporting difficulties associated with the seasonal, intermittent nature of peat mining in the State. The Alaska Department of Natural Resources' Division of Geological and Geophysical Surveys (DGGs) estimated peat production to be about 28,300

¹The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending on 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 1997 USGS mineral production data published in this chapter are estimates as of January 1998. Construction sand and gravel and crushed stone estimates are updated periodically. To obtain the most current information, please contact the appropriate USGS mineral commodity specialist. Call MINES FaxBack at (703) 648-4999 from a fax machine with a touch-tone handset, and request Document # 1000 for a telephone listing of all mineral commodity specialists, or call USGS information at (703) 648-4000 for the specialist's name and number. This telephone listing may also be retrieved over the Internet at <http://minerals.er.usgs.gov/minerals/contacts/comdir.html>. All Mineral Industry Surveys—mineral commodity, State, and country—also may be retrieved by MINES FaxBack or over the Internet at <http://minerals.er.usgs.gov/minerals/>.

²Gold figures in table 1, as reported to the USGS, possibly understate actual 1997 production and value. The canvassing of gold placer mineral production was discontinued by the U.S. Bureau of Mines (the Federal agency formerly responsible for U.S. nonfuel mineral production data collection) in 1994. Gold production and value in table 1 are preliminary numbers that are estimated by the USGS. Data collected by Alaska's State government indicate estimated production in 1997 to have been 17,970 kilograms at about \$198.4 million. Final total gold production for Alaska, done in collaboration with the Alaska Department of Natural Resources' Division of Geological and Geophysical Surveys, is reflected in final 1995 and 1996 data in table 1.

cubic meters for a value of more than \$170,000.

The following narrative information was provided by the DGGs, much of the data based on DGGs surveys and estimates (Swainbank, 1997). Highlights for 1997 include new production at the Fort Knox gold mine and the Illinois Creek gold-silver mine near Galena; full production at the Greens Creek polymetallic mine near Juneau; increased production at the Red Dog zinc-lead mine near Kotzebue; and continued production at Nixon Fork. There was placer production by Alaska Gold Co. in Nome, Yellow Eagle Mining Inc. and Polar Mining Inc. in Fairbanks, as well as dozens of smaller mines. Development was reported at Red Dog, the Kensington gold mine near Juneau, and the Calder Bay limestone deposit on Prince of Wales Island.

Exploration highlights include continued success at gold prospects such as True North, Ester Dome and Golden Summit near Fairbanks; Donlin Creek and Golden Horn near Flat; and Pogo near Delta. Substantial exploration for base metal and polymetallic deposits was reported at Red Dog, throughout the eastern interior, at the Pebble Copper Prospect near Iliamna, and at the Niblack Mine on Prince of Wales Island.

Although investment in mining development was less in 1997 than in 1996, an increase in exploration expenditures and in the value of the minerals and materials produced resulted in a slight increase in the total value of the industry. Exploration expenditures in 1997 were \$57.3 million (\$44.6 million in 1996), development investment was \$167 million (\$394 million in 1996), and the value of production in 1997 was \$902 million compared with \$590 million in 1996. The net result is that the total value of the industry in 1997 was \$1.13 billion versus \$1.03 billion in 1996. There was a substantial increase in all types of hard rock mining employment in 1997, offset to some extent by a decline in placer mining and particularly in mine development work.

With the commissioning of the Fort Knox and Illinois Creek gold mines, and full production at the Greens Creek polymetallic mine, there was a surge in the amount of gold and silver produced in 1997, and increased production of lead and zinc. These factors, coupled with higher average prices for zinc than in 1996, led to a much higher value of base metals for 1997.

The Red Dog zinc-lead-silver mine owned by NANA Corp. and operated by Cominco Alaska Inc. produced 610,000 metric dry tons of 55.2% zinc concentrate and 113,000 dry tons of 56.1% lead concentrate from 1,930,000 tons of ore milled. Average grades of the mill-feed were 20.3% zinc, 5.2% lead and 98 grams per metric ton silver. Operating profit for 1997 was \$102 million compared with \$25 million in 1996.

Alaska Gold Co. continued with open-pit placer gold mining of the raised beaches north of Nome, while Novus Resources tested its suction-dredge methods offshore. About 40 miles south of Galena, the Illinois Creek lode gold-silver mine poured its first gold in June. Dakota Mining Corp. expects final tabulation of production for 1997 to be about 680 kilograms, to be about 2,500 kilograms in 1998, and to average about 2,000 kilograms per year for the next 5 years.

At the Nixon Fork gold-copper skarn mine near McGrath, Consolidated Nevada Goldfields Inc. expects to produce about 1,200 kilograms of gold as well as copper concentrates.

With the commissioning of the Fort Knox gold mine about 24 kilometers northeast of Fairbanks, this region became the second most productive region of the State in 1997. Although the first official gold pour at the Fort Knox Mine was on December 20, 1996, the first commercial gold was produced in March 1997. Production through the end of December, including 1,421 kilograms of precommercial production prior to March 1, was 11,391 kilograms from 10,604,000 tons grading 1.2 grams per metric ton. The cash cost per ounce was \$170, the total production cost was \$342, and the average selling price for all operations worldwide was \$360 per ounce.

There were several medium-sized placer gold mines operating in the Fairbanks area in 1997, including the Cripple Creek Venture between Yellow Eagle Mining and Exploration Orbite at Ester; Polar Mining's open-pit operation at Fox; and the Little Eldorado Group's underground operation on its namesake creek. Alaska Placer Development was actively mining the Livengood Bench about 130 kilometers north of Fairbanks, and there were about a dozen smaller operations in the Manley-Rampart area about 160 kilometers to the west of the city. Placer operations were also active in the Circle, Seventymile, Fortymile, and Bonfield districts of central Alaska.

The Greens Creek Mine (Kennecott 70.3%, Hecla Mining 29.7%), expects to produce concentrates containing payable

36,000 tons of zinc, 18,000 tons of lead, 1,700 kilograms of gold, 342 tons of silver, and 900 tons of copper. The only other mines reporting production were two placer mines in the panhandle.

In 1997, the Illinois Creek gold-silver mine near Galena and the Fort Knox gold mine near Fairbanks became operational, and the Greens Creek Mine near Juneau had reached full productivity. Statewide exploration expenditures reported in 1997 were up 28% from the previous year.

During 1997 the DGGs released new geophysical surveys in the historic mining regions of Rampart, Chulitna, and Petersville-Collinsville. New surveys were contracted and flown during 1997 near Iron Creek in the Talkeetna Mountains north of Anchorage, and south of Ruby on the Yukon River. The Iron Creek survey results were released in January 1998 and the Ruby survey in February 1998. The Division also worked with the U.S. Bureau of Land Management to contract for airborne surveys near Wiseman in the Brooks Range and, together with municipal funds, near Wrangell in southeastern Alaska. The Wrangell surveys were released late in 1997 and the Wiseman survey is expected to be released early in 1998.

Reference Cited

Swainbank, R.C. and Clautice, K.H., *Alaska's Mineral Industry 1997: A Summary*, Information Circular 43, Alaska Department of Natural Resources, Division of Geological and Geophysical Surveys, March 1998, 12 p.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN ALASKA 1/ 2/

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	1995		1996		1997 p/	
	Quantity	Value	Quantity	Value	Quantity	Value
Gemstones	NA	10	NA	11	NA	10
Gold 3/ 4/ kilograms	4,410	56,000	5,020	61,000	16,300	175,000
Sand and gravel, construction	13,700	48,500	9,380	35,900	10,000	39,300
Silver 3/ metric tons	109	18,100	W	W	W	W
Stone, crushed 5/	2,430	14,500	2,600	16,500	2,600	17,000
Zinc 3/ metric tons	321,000	395,000	W	W	W	W
Combined values of copper (1996-97), lead, stone [crushed dolomite, granite, and limestone (1997), crushed dolomite and limestone (1995-96)], zinc, and values indicated by symbol W	XX	(6/)	XX	499,000	XX	711,000
Total	XX	538,000 7/	XX	613,000	XX	942,000

p/ Preliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; value included with "Combined value" data. XX Not applicable.

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

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

3/ Recoverable content of ores, etc.

4/ Data collected by the State.

5/ Excludes certain stones; kind and value included with "Combined value" data. Figures for crushed stone in 1995 are current as of July 1998 and do not agree with those published in the 1997 Preliminary Statistical Summary.

6/ Value excluded to avoid disclosing company proprietary data.

7/ Partial total, excludes values that must be concealed to avoid disclosing company proprietary data.

TABLE 2
ALASKA: CRUSHED STONE SOLD OR USED, BY KIND 1/ 2/

Kind	1995				1996			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone-dolomite	(3/)	(3/)	(3/)	(3/)	(3/)	(3/)	(3/)	(3/)
Granite	1	24	\$100	\$4.17	(3/)	(3/)	(3/)	(3/)
Traprock	5	1,030	3,230	3.15	6	888	\$3,300	\$3.72
Slate	1	7	48	6.86	1	7	48	6.86
Miscellaneous stone	6	1,370 r/	11,100 r/	8.10 r/	6	1,710	13,200	7.72
Total	XX	2,430 r/	14,500 r/	5.97 r/	XX	2,600	16,500	6.35

r/ Revised. XX Not applicable.

1/ Data derived in part from the Alaska Division of Geological and Geophysical Surveys information.

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

3/ Excludes limestone-dolomite and granite from State total to avoid disclosing company proprietary data.

TABLE 3
ALASKA: CRUSHED STONE SOLD OR USED BY PRODUCERS
IN 1996, BY USE 1/ 2/ 3/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse and fine aggregates:			
Graded road base or subbase	70	\$572	\$8.17
Unpaved road surfacing	22	171	7.77
Crusher run or fill or waste	19	194	10.21
Other construction materials 4/	122	757	6.20
Unspecified: 5/			
Actual	1,640	12,500	7.63
Estimated	726	2,290	3.15
Total	2,600	16,500	6.35

1/ Data derived in part from the Alaska Division of Geological and Geophysical Surveys information.

2/ Includes miscellaneous stone, slate, and traprock; excludes limestone-dolomite and granite from State total to avoid disclosing company proprietary data.

3/ Data are rounded to three significant digits, except unit value; may not add to totals shown.

4/ Includes bituminous aggregate (coarse), concrete aggregate (coarse), filter stone, other coarse aggregate, other graded coarse aggregate, riprap and jetty stone, stone sand (concrete), and screening (undesignated).

5/ Includes production reported without a breakdown by end use and estimates for nonrespondents.

TABLE 4
ALASKA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1996,
BY MAJOR USE CATEGORY 1/

Use	Quantity (thousand metric tons)	Value (thousands)	Value per ton
Concrete aggregate (including concrete sand)	161	\$1,320	\$8.22
Concrete products (blocks, bricks, pipe, decorative, etc.)	18	85	4.72
Asphaltic concrete aggregates and road base materials	1,340	5,850	4.37
Snow and ice control	48	413	8.60
Railroad ballast	82	630	7.68
Other miscellaneous uses	91	514	5.65
Unspecified: 2/			
Actual	7,100	22,500	3.16
Estimated	541	4,610	8.53
Total or average	9,380	35,900	3.83

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

2/ Includes production reported without a breakdown by end use and estimates for nonrespondents.