THE MINERAL INDUSTRY OF UTAH

This chapter has been prepared under a Memorandum of Understanding between the U.S. Bureau of Mines, U.S. Department of the Interior, and the Utah Geological Survey for collecting information on all nonfuel minerals.

In 1995, Utah ranked fourth nationally in total nonfuel mineral production value,[1] according to the U.S. Geological Survey (USGS). The State has climbed in rank during the past several years, having been seventh in 1992-93 and sixth in 1994. The estimated value for 1995 exceeded $1.8 billion, an increase of almost 21% compared with that of 1994. This followed a 16% increase from 1993 to 1994 (based on final 1994 data). The State accounted for nearly 5% of the U.S. total nonfuel mineral production value.

Metals accounted for about four-fifths of Utah's mineral value, copper being about 65% of the State's entire metal value. Increases in Utah's mineral value in 1992 and 1994-95 were mostly caused by higher prices and increased production and sales of copper. In 1993, copper had a similar degree of impact, but as a decrease. Compared with 1994, the values of the following mineral commodities increased in 1995: copper, magnesium metal, molybdenum, salt, potash, silver, phosphate rock, magnesium compounds, iron ore, common clays, grade-A helium, gypsum (crude), gemstones, industrial sand and gravel, masonry cement, and beryllium concentrates. The value of the following decreased: gold, portland cement, construction sand and gravel, lime, crushed stone, and bentonite clays.

Based on USGS estimates of the quantities of minerals produced in the United States during 1995, Utah remained second in copper; second of four potash-producing States; third in gold, magnesium metal, molybdenum, and mercury; fourth in silver, phosphate rock, magnesium compounds, and iron ore; and sixth in salt. Utah climbed from 10th to 8th in gemstone production (based on value), remained the only State to produce beryllium ore, and was one of five States that produced grade-A helium. Utah mines and manufacturing plants produced substantial quantities of portland cement, construction sand and gravel, lime, and dimension stone. Additionally, industrial sand and gravel mining was resumed in 1995, and raw steel production continued in the State.

The remainder of this narrative was derived from information provided by the Utah Geological Survey. Mineral exploration in the State slowed significantly in 1995 for the second consecutive year. Mining companies

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN UTAH[1 2]

Mineral		1993		1994		1995[p]	
		Quantity	Value (thousands)	Quantity	Value (thousands)	Quantity	Value (thousands)
Beryllium concentrates	metric tons	4,940	$5	4,330	$5	5,630	$6
Clays[3]	thousand metric tons	216	3,130	243	3,410	348	3,850
Gemstones		NA	1,160	NA	620	NA	826
Potash (K_2O)	thousand metric tons	[r]182	[r]48,400	W	W	W	W
Salt	do.	2,250	46,800	1,680	56,700	2,400	83,400
Sand and gravel:							
Construction	do.	[e]16,000	[e]56,000	21,100	69,600	18,000	61,200
Industrial	metric tons	—	—	—	—	90,700	800
Silver[4]	do.	135	18,700	W	W	W	W
Stone (crushed)	thousand metric tons	4,560	29,400	4,540	19,800	4,300	19,000
Combined value of cement, clays [bentonite, fuller's earth (1993)], copper, gold, gypsum (crude), helium (Grade-A), iron ore (usable), lime, magnesium compounds, magnesium metal, mercury, molybdenum, phosphate rock, sodium sulfate (natural), stone [dimension (1993, 1995), dimension quartzite and sandstone (1994)], and values indicated by symbol W		XX	1,110,000	XX	1,370,000	XX	1,670,000
Total		XX	1,310,000	XX	1,520,000	XX	1,840,000

[e]Estimated. [p]Preliminary. [r]Revised. 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]Excludes certain clays; kind and value included with "Combined value" data.
[4]Recoverable content of ores, etc.

filed 22 Notices of Intent (NOI) to explore during 1995; this compared with 36 for 1994 and 54 for 1993, a more typical year. In 1995, nearly 30% of the NOI's were for industrial rock and minerals, the remainder being mostly for precious metals. Precious metal exploration projects were mostly in Beaver, Tooele, and Box Elder Counties.

Kennecott Utah Copper Corp. completed its $880 million smelter-refinery expansion and modernization project at its Bingham Canyon operation. The new smelter utilizes state-of-the-art flash-smelting and flash-converting techniques. At capacity, Kennecott expects to be able to process nearly 1 million metric tons[2] (1.1 million short tons) of concentrate per year. This is about a 70% increase from previous capacity, making Kennecott self-sufficient for smelting/refining capacity. Kennecott had been exporting large quantities of copper concentrate. The new refinery will increase annual output from 200,000 to 280,000 tons (220,000 to 310,000 short tons) of cathode copper and will lower unit cash costs for refining by an estimated 35%. Additionally, Kennecott claimed the new smelter to be the cleanest in the world, recovering 99.9% of all sulfur dioxide emissions. Kennecott also continued with permitting activities on its $510 million program to expand a tailing pond by 1,400 hectares (3,500 acres) at the Bingham Canyon Mine. As part of the program, the company said it would build a 1,000 hectare (2,500 acre) wildlife preserve to replace affected wetlands. Completion of the tailings pond expansion project was expected by 1997.

In August, Energy Fuels Nuclear Inc. resumed uranium processing activities at its White Mesa mill south of Blanding, San Juan County. The initial milling campaign was scheduled to last about 5 months (August 1995 to January 1996) and was expected to produce about 900 tons (2 million pounds) of U_3O_8 from roughly 180,000 tons (200,000 short tons) of stockpiled ore. The White Mesa mill is the newest (and only) operating uranium mill in the United States.

Summo Minerals Corp. announced plans to develop its Lisbon Valley open pit copper mine and heap-leach operation in San Juan County, about 57 kilometers (35 miles) southeast of Moab. Summo will mine 11,000 tons of ore per day (12,000 short tons) from three separate pits. Copper leachate from the heap-leach pad will be processed in a 13,000 liter-per-minute (3,000-gallon-per-minute) solvent extraction electrowinning plant. Minable reserves were reported by the company to be more than 38.6 million tons (42.6 million short tons) at a grade of 0.44% copper. At full capacity, the mine and plant was expected to produce 15,400 tons (34 million pounds) of electrowon cathode copper per year. Mine production was scheduled to begin in April 1997 with initial cathode production scheduled for July.

A joint venture between Chief Consolidated Mining Co. (the operator) and Akiko Gold Resources Ltd. continued exploration at the Burgin lead-zinc-silver mine in the East Tintic District. Revised reserve estimates were being calculated based on underground drilling and sampling. The partners expected total reserves to approach the 1.8 million tons (2 million short tons) needed to begin development. In addition to the lead-zinc-silver ore, a gold-rich zone was discovered that may contain as much as 3,110 kilograms (100,000 troy ounces) of gold. A mine plan was developed and completion of a feasibility study was expected during 1996. A comprehensive feasibility study was necessary because, if reopened, the Burgin Mine will need extensive redevelopment, including a new mine shaft, to make it an economic and efficient modern mining operation.

Centurion Mines Corp. announced a copper-molybdenum discovery at the O.K. Mine northwest of Milford. The company reported calculated ore reserves to be about 1.8 million tons (2 million short tons) at a grade of 0.625% copper and an additional 1.8 million tons at 0.40% copper; the deposit overall contained a grade of about 0.023% molybdenum. Surface trenching and drilling revealed additional copper-molybdenum mineralization significantly beyond the limits of the calculated ore reserves.

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[1]The terminologies "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 1995 USGS mineral production data published in this chapter are estimated as of Dec. 1995. Estimates for some commodities, e.g., construction sand and gravel, crushed stone, and portland cement, are periodically updated. To obtain the most recent information please contact the appropriate USGS mineral commodity specialist. Call MINES FaxBack at (703) 648-4999 from your fax machine and request Document No. 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.

[2]All tons are metric tons unless otherwise specified.

TABLE 2

UTAH: CRUSHED STONE[1] SOLD OR USED BY PRODUCERS IN 1994, BY USE[2]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Coarse aggregate (+1 1/2 inch): Riprap and jetty stone	W	W	$5.61
Coarse aggregate, graded: Bituminous aggregate, coarse	W	W	3.31
Fine aggregate (-3/8 inch):			
Stone sand, bituminous mix or seal	W	W	3.31
Screening, undesignated	7	$34	4.86
Coarse and fine aggregates:			
Graded road base or subbase	509	1,670	3.28
Unpaved road surfacing	37	183	4.95
Crusher run or fill or waste	W	W	1.10
Other construction materials	1,710	3,220	1.88
Agricultural: Poultry grit and mineral food	([3])	([3])	27.60
Chemical and metallurgical:			
Cement manufacture	([3])	([3])	4.66
Lime manufacture	([3])	([3])	10.10
Flux stone	([3])	([3])	6.37
Unspecified:[4] Estimated	24	127	5.29
Total	4,540	19,800	4.36

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Includes dolomite, limestone, limestone-dolomite, sandstone and quartzite, and volcanic cinder and scoria.
[2]Data are rounded to three significant digits; may not add to totals shown.
[3]Withheld to avoid disclosing company proprietary data; included in "Total."
[4]Includes production reported without a breakdown by end use and estimates for nonrespondents.

TABLE 3

UTAH: CRUSHED STONE SOLD OR USED, BY KIND[1]

Kind	1993				1994			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone[2]	[r]16	[r]3,170	[r]$24,000	[r]$7.58	13	1,980	$12,300	$6.23
Dolomite	2	W	W	3.65	2	W	W	2.66
Sandstone and quartzite	[r]5	W	W	[r]5.07	5	W	W	6.30
Volcanic cinder and scoria	4	13	105	8.07	3	4	4	1.00
Total	XX	4,560	29,400	6.45	XX	4,540	19,800	4.36

[r]Revised. W Withheld to avoid disclosing company proprietary data; included in "Total." XX Not applicable.
[1]Data are rounded to three significant digits; may not add to totals shown.
[2]Includes "Limestone-dolomite," reported with no distinction between the two.

TABLE 4

UTAH: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1994, BY USE AND DISTRICT[1]

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction aggregates:						
Coarse aggregate (+1 1/2 inch)[2]	—	—	W	W	—	—
Coarse aggregate, graded[3]	—	—	W	W	—	—
Fine aggregate (-3/8 inch)[4]	—	—	W	W	—	—
Coarse and fine aggregate[5]	—	—	W	W	—	—
Other construction materials	—	—	2,260	5,110	—	—
Agricultural[6]	—	—	(7)	(7)	—	—
Chemical and metallurgical[8]	(7)	(7)	(7)	(7)	—	—
Unspecified:[9] Estimated	(7)	(7)	(7)	(7)	17	103
Total	1,510	11,500	3,020	8,230	17	103

W Withheld to avoid disclosing company proprietary data; included with "Other construction materials."
[1]Data are rounded to three significant digits; may not add to totals shown.
[2]Includes riprap and jetty stone.
[3]Includes bituminous aggregate (coarse).
[4]Includes stone sand (bituminous mix or seal) and screening (undesignated).
[5]Includes graded road base or subbase, unpaved road surfacing, and crusher run (select material or fill).
[6]Includes poultry grit and mineral food.
[7]Withheld to avoid disclosing company proprietary data; included in "Total."
[8]Includes cement manufacture, flux stone, and lime manufacture.
[9]Includes production reported without a breakdown by end use and estimates for nonrespondents.

TABLE 5

UTAH: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1994, BY MAJOR USE CATEGORY[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Value per ton
Concrete aggregate and concrete products[2]	4,110	$16,500	$4.02
Asphaltic concrete aggregates and other bituminous mixtures	2,230	9,100	4.07
Road base and coverings[3]	5,130	15,600	3.04
Fill	3,830	6,530	1.70
Other[4]	173	709	4.10
Unspecified:[5]			
Actual	54	114	2.11
Estimated	5,570	21,000	3.77
Total or average	21,100	69,600	3.30

[1]Data are rounded to three significant digits; may not add to totals shown.
[2]Includes plaster and gunite sands.
[3]Includes road and other stabilization (lime).
[4]Includes railroad ballast and snow and ice control.
[5]Includes production reported without a breakdown by end use and estimates for nonrespondents.

TABLE 6

UTAH: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1994, BY USE AND DISTRICT[1]

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		Unspecified within all districts	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products[2]	1,490	6,110	2,460	8,970	167	1,440	—	—
Asphaltic concrete aggregates and road base materials	639	2,310	1,270	5,140	94	871	234	786
Road base and covering[3]	1,310	3,850	2,820	8,160	754	2,890	245	674
Fill	604	862	2,960	5,170	272	503	—	—
Other miscellaneous uses[4]	25	45	94	318	55	347	—	—
Unspecified:[5]								
Actual	2	6	41	90	11	18	—	—
Estimated	513	1,800	3,960	14,100	1,090	5,160	—	—
Total	4,580	15,000	13,600	41,900	2,440	11,200	478	1,460

[1]Data rounded to three significant digits; may not add to totals shown.
[2]Includes plaster and gunite sands.
[3]Includes fill, and road and other stabilization (lime).
[4]Includes railroad ballast and snow and ice control.
[5]Includes production reported without a breakdown by end use and estimates for nonrespondents.