

THE MINERAL INDUSTRY OF UTAH

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

In 2000, the estimated value¹ of nonfuel mineral production for Utah was \$1.45 billion, based upon preliminary U.S. Geological Survey (USGS) data. This was a 12% increase from that of 1999,² and followed a 3.7% decrease from 1998 to 1999. The State rose to 9th from 10th in rank among the 50 States in total nonfuel mineral production value, of which Utah accounted for about 3.6% of the U.S. total.

Metals accounted for more than 63% of Utah's nonfuel mineral production value, copper being significantly more than half of the State's entire metal value. In 2000, the largest increase in value was a more than \$100 million increase in the value of copper. This was followed by substantial increases in gold (up more than \$55 million), molybdenum concentrates (up about \$30 million), and salt (table 1). Increases of about \$4 million each occurred in lime and potash. The most significant decrease was a more than \$50 million drop in the value of magnesium metal. All other value increases or decreases were in the range of \$1 million or less, having little effect on the overall result.

In 1999, the drop in Utah's value from that of 1998 was mainly attributable to decreases of nearly \$50 million in the value of copper, more than \$20 million in potash, \$15 million in construction sand and gravel, and \$9 million in molybdenum concentrates. Smaller yet significant decreases occurred in magnesium metal, magnesium compounds, silver, lime, grade-A helium, and gemstones (descending order of change). Common clay and beryllium concentrate values were also slightly down. Somewhat offsetting these decreases were higher values for salt (table 1); phosphate rock, up about \$16 million; portland cement, up more than \$10 million; crushed stone; and gold, up about \$2 million. Smaller increases occurred in gypsum, perlite, and dimension stone.

Based upon USGS estimates of quantities produced in the 50 States during 2000, Utah remained the only State to produce

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 2000 USGS mineral production data published in this chapter are preliminary estimates as of July 2001 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. A telephone listing of the specialists may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals/contacts/comdir.html>, by using MINES FaxBack at (703) 648-4999 from a fax machine with a touch-tone handset (request Document #1000 for a telephone listing of all mineral commodity specialists), or by calling USGS information at (703) 648-4000 for the specialist's name and number. All Mineral Industry Surveys—mineral commodity, State, and country—also may be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>; facsimile copies may be obtained from MINES FaxBack.

²Values, percentage calculations, and rankings for 1999 may vary from the Minerals Yearbook, Area Reports: Domestic 1999, Volume II, owing to the revision of preliminary 1999 to final 1999 data. Data for 2000 are preliminary and are expected to change; related rankings may also change.

beryllium concentrates; second in copper and second of 3 potash-producing States; fourth in phosphate rock, magnesium compounds, and perlite; fifth in silver, bentonite, and gemstones; and sixth in salt (each ranking listed in descending order of value). While the State rose to 2d from 3d in molybdenum concentrates and to 2d from 4th in gold, it dropped to 2d from 1st of 2 magnesium metal-producing States and to 11th from 8th in construction sand and gravel. Additionally, the State was a significant producer of portland cement and lime.

The Utah Geological Survey³ (UGS) provided the narrative information that follows. Production data in the following text are those reported by the UGS, based upon its own surveys, estimates, and information gathered from company annual reports. The UGS data may differ from some USGS preliminary estimates and production figures as reported to and estimated by the USGS.

Utah has 85 active large mines (excluding sand and gravel) that are grouped by industry segment as follows: base metals, 4; precious metals, 1; coal, 12; and industrial minerals (including gemstones, geodes, and fossils), 68. Within the State, 104 small mines reported production in 2000, 24 more than in 1999. Small mines are grouped as follows: base metals, 1; precious metals, 13; industrial minerals, 90 (including building, decorative, and dimension stone; gemstones; fossils; and geodes).

In December 2000, the Utah Division of Oil, Gas and Mining (DOG M) sent 427 annual report questionnaires to all large and small mine permit holders. By March 13, 2001, 331 reports had been received. Sixty-four large mines and 111 small mines reported production. Several reporting mines produced more than one mineral commodity.

Base-metal production, with an estimated value of \$749 million, was the largest contributor to the value of minerals produced in 2000. Those metals were, in descending order of value: copper, magnesium metal, molybdenum, and beryllium. Kennecott Utah Copper Corp.'s Bingham Canyon Mine, located in Salt Lake County, about 30 kilometers (km) southwest of Salt Lake City, is the State's sole producer of copper and molybdenum, and a major producer of gold and silver. The combined value of minerals produced from the Bingham Canyon Mine was more than one-third of the total value of all minerals produced Statewide.

Copper production from Kennecott's Bingham Canyon Mine increased slightly in 2000 to 296,000 metric tons (t) from 1999 production of 279,000 t of copper metal. Kennecott's annual refined copper production has stabilized at slightly less than 270,000 t (Rio Tinto Ltd., 2001, p. 19).

Magnesium metal was produced from Great Salt Lake brines by Magnesium Corp. of America at its electrolytic plant at Rowley in Tooele County. The plant has a capacity to produce

³Robert Gloyn, Senior Geologist, and Roger Bon, Industry Outreach Specialist, at the Utah Geological Survey authored the text of the State mineral industry information provided by that agency.

43,000 metric tons per year (t/yr) of magnesium metal (99.9% purity), and is one of only two active primary processing facilities in the United States. Magnesium production was less than capacity in 2000, due to construction of a new process circuit and increased control of flue-gas emissions. Demand for magnesium metal decreased worldwide and domestic producer prices were at their lowest level since 1994.

The sole molybdenum producer in Utah, Kennecott's Bingham Canyon Mine, produced 10,100 t of molybdenum in concentrates in 2000, a substantial increase from 1999 production (Rio Tinto Ltd., 2001, p. 19). The Bingham Canyon Mine was 1 of 6 (down from 8) molybdenum-producing mines in the United States in 2000. Molybdenum was recovered as a byproduct from the copper milling operation.

Utah continued to be the Nation's sole producer of beryllium. Beryllium ore (bertrandite) was mined at Brush Wellman Inc.'s Topaz and Hogs Back Mines in Juab County and was processed with imported beryl at the company's plant a few kilometers north of Delta in Millard County. The Hogs Back Mine began producing in 1998. In 2000, more than 91,000 t of ore was mined and trucked to the company's Delta plant for processing. The product (beryllium hydroxide) was then sent to the company-owned refinery and finishing plant in Ohio, where it was converted into beryllium metal, alloys, and oxide.

No vanadium or uranium ores were mined in Utah in 2000, as vanadium prices remained near a 5-year low, and the market continued to be weak for uranium. Both International Uranium Corp.'s White Mesa mill in San Juan County and U.S. Energy Co.'s Shootaring Canyon mill in Garfield County were idle throughout the entire year. No milling is planned until the prices of uranium and vanadium significantly increase.

Precious-metal production, valued at \$212 million, included gold (90% of total value) and silver (10% of total value). Gold production in 2000 was estimated to be nearly 21,800 kilograms (kg), a substantial increase from the 14,600 kg produced in 1999. Gold was produced from two surface mines owned by Kennecott Corp.—one primary producer (Barneys Canyon Mine) and one byproduct operation (Bingham Canyon Mine), both located in Salt Lake County. Several small mines in the State are known to produce minor amounts of precious metals, but metal-specific production is not reported, and is not included in the above total. Silver production Statewide was estimated to be approximately 124,000 kg, 3,700 kg more than in 1999. Silver is produced as a byproduct metal from the Bingham Canyon Mine.

Industrial minerals production, with an estimated value of \$500 million, was the second-largest contributor to the value of minerals produced in 2000. Major industrial mineral commodities produced by group or individual commodity, in descending order of value, included (1) sand and gravel and crushed stone; (2) portland cement, lime, limestone, and dolomite; (3) salines, including sulfate of potash, salt, potash (potassium chloride), and magnesium chloride; (4) phosphate rock; (5) gilsonite; (6) expanded shale; (7) gypsum; and (8) common clay and bentonite.

Sand and gravel and crushed stone (including limestone and dolomite) were the largest contributors to the value of industrial minerals produced in 2000. These materials are produced in every county in Utah by commercial operators and by Federal, State, and county agencies. Data compiled by the USGS show that in 2000, 31.4 million metric tons (Mt) of sand and gravel

and 8.0 Mt of crushed stone were produced, with a combined value of \$142 million (table 1). This compares to 39.5 Mt of sand and gravel and 8.8 Mt of crushed stone produced in 1999, with a combined value of \$170 million.

Portland cement, lime, limestone, and dolomite were the second-highest value industrial minerals produced in 2000, with a combined value of \$137 million. Two operators produce portland cement in Utah—Holnam, Inc. and Ash Grove Cement Co. Holnam's Devil's Slide plant is east of Morgan in Morgan County, and Ash Grove's Leamington plant is east of Lynndyl in Juab County. Both companies have expanded production capacity, and the two plants have a combined capacity of more than 1.4 Mt of cement annually. Both plants operated at, or near, capacity in 2000. In addition to limestone, both Holnam and Ash Grove Cement mine modest amounts of shale and silica that are also used in the manufacture of cement.

Lime production from two operations was slightly lower in 2000 than in 1999. Graymont Western U.S., Inc. (formerly Continental Lime Co.) produced high-calcium quicklime, and Chemical Lime of Arizona, Inc. produced dolomitic quicklime and hydrated lime. The two companies have a combined capacity of more than 900,000 t/yr. Both operations serve markets in Utah and surrounding States. Continental Lime's plant is in the Cricket Mountains, approximately 56 km southwest of Delta in Millard County, and is rated as one of the 10 largest lime plants in the United States. Chemical Lime of Arizona's plant is about 13 km northwest of Grantsville in Tooele County.

Nineteen companies quarried 2.2 Mt of limestone and dolomite in 2000, which was used mainly in construction, steelmaking, and flue-gas desulfurization in powerplants. The three largest suppliers of crushed limestone used in construction are (1) Valley Asphalt Co., from two quarries in Utah County; (2) Pelican Point Rock Products Co. (formerly Larsen Limestone Co.), from one quarry in Utah County; and (3) Harper Construction Co., from one quarry in Salt Lake County. A small amount of limestone and dolomite was also crushed to a fine powder and marketed as "rock dust" to the coal mining industry.

Brine-derived products, including salt, were the third-largest contributors to the value of industrial mineral production in Utah, with a combined value of about \$100 million. In addition to salt, brine-derived products included magnesium chloride and potash (potassium chloride and sulfate of potash [SOP]). One company (North Shore Limited Partnership) produced a small amount of concentrated brine, which was used as an ingredient in mineral food supplements. The Statewide production of salt and other brine-derived products, excluding magnesium metal, was estimated to be 3.1 Mt in 2000, essentially the same as in 1999. Potash production (including SOP) is estimated to be about 210,000 t in 2000, approximately 160,000 t less than in 1999.

Salt production alone was estimated to be 2.7 Mt in 2000, about 545,000 t more than in 1999, with most of the production coming from three operators using brine from the Great Salt Lake. These operators are (1) Cargill Salt Co., (2) IMC Kalium Ogden Corp. (formerly GSL Minerals), and (3) Morton International, Inc. In addition, three other companies produced salt and/or potash from operations not located on the Great Salt Lake. They are (1) Moab Salt Co. near Moab in Grand County (salt and potash), (2) Redmond Minerals, Inc. near Redmond in

Sanpete County (salt), and (3) Reilly Chemical Company at Wendover in Tooele County (potash).

Utah's only phosphate producer, SF Phosphates Ltd., has a phosphate operation 18 km north of Vernal in Uintah County. SF Phosphates is a partnership of Farmland Industries, Inc. (Missouri) and J.R. Simplot, Inc. (Idaho). The company mines about 2.7 Mt of ore annually, which is processed into about 900,000 t of concentrate and is transported in slurry form to the company's Rock Springs, Wyoming, fertilizer plant via a 144-km-long underground pipeline. During 2000, the mine produced more than 3.2 Mt of ore, the highest level of production in the past 9 years.

Gilsonite production for 2000 is estimated to be more than 55,000 t, approximately 9,000 t more than in 1999. Gilsonite is an unusual solid hydrocarbon that has been mined in Utah for more than 100 years. The three operations producing gilsonite are all near the town of Bonanza in eastern Uintah County. In descending order of production they are (1) American Gilsonite Co.'s Bonanza Mine, (2) Zeigler Chemical and Minerals Co.'s Zeigler and Tom Taylor Mines, and (3) Lexco, Inc.'s Cottonwood Mine.

Utelite, Inc., mined more than 181,000 t of shale in 2000 to manufacture "expanded shale" for use as a lightweight aggregate for the construction industry. The mine is located near the town of Wanship in Summit County. Production of "expanded shale" increased slightly over the past year.

More than 455,000 t of gypsum was produced by seven companies in 2000, 18,000 t more than in 1999. The companies were, in descending order of production, U.S. Gypsum Co., Georgia Pacific Corp., Nephi Gypsum, Inc., Nephi Sandstone Co., H.E. Davis and Sons, D.K. Gypsum Industries, and Western Clay Co. Both U.S. Gypsum and Georgia Pacific operated wallboard plants near Sigurd in Sevier County. Most of the gypsum produced in Utah was used for making wallboard, but several operators supplied raw gypsum to regional cement companies where it was used as an additive to retard the setting time of cement and to the agriculture industry for use as a soil conditioner.

More than 295,000 t of common clay and approximately 55,000 t of bentonite were produced by six companies in 2000, an 11% increase in common clay and a 30% decrease in bentonite compared to 1999. The companies were, in descending order of production, Interstate Brick Co. (common clay), ECDC Environmental, LLC (common clay), Interpace Industries (common clay), Western Clay Co. (bentonite), Redmond Minerals, Inc. (bentonite), and Paradise Management Co. (common clay). More than 75% of all clay was used in the manufacture of brick.

During 2000, DOGM received 11 large mine permit applications and 56 new small mine permit applications. All of the large mine permit applications were made to change from small to large mine status. New large mine permits included seven dimension stone quarries, two aggregate quarries, one gypsum quarry, and one precious metal mine. New small mine permits were grouped by commodity as follows: dimension stone, 22; aggregate, 9; clay, 6; mill sites, 5; gems and fossils, 4; precious metals, 4; and other, 6.

In 2001, mining may resume at five existing mines and one mine will be shut down. Mining should begin at the Trixie gold-copper mine of Chief Gold Mines Inc. in the Tintic district, at the Deer Trail Mine of Unico Inc. in the Mt. Baldy district,

and at the Silver Bell Mine of Unico Inc. in the American Fork district. Additionally, Nevada Star Resource Corp. and Summo Minerals Corp. hope to bring their heap leach solvent extraction-electrowinning copper properties into production, contingent upon securing project financing. Previously announced drill-indicated reserves for the Beaver Lake-Rocky Range property of Nevada Star Resources are 5.8 Mt of 0.74% copper, and newly calculated reserves for the Lisbon Valley property of Summo Minerals are 33.3 Mt of 0.51% copper. Kennecott's Barneys Canyon Mine will stop mining in late 2001 when its ore reserve is depleted, but will continue to produce gold for several years at a reduced rate from its leaching operation.

Exploration for base and precious metals remained at a low level during 2000. DOGM received 15 Notices of Intent (NOIs) to explore; 11 fewer than in 1999 and significantly fewer than the 50 to 60 per year received during the early 1990s. The number of new NOIs listed by county included Beaver, 7; Box Elder, 1; Kane, 2; Millard, 1; Tooele, 2; Uintah, 1; and Washington, 1. Five of the NOIs were for precious metals and 10 were for industrial minerals. Most drilling was around existing mines or a followup on previous drilling. Most exploration was for precious metals, but several projects were for copper or lead and zinc.

The Milford area of Beaver County was the most active exploration area in the State. Exploration and drilling were done by several companies and individuals including Breccia Development Co. and Nevada Star Resource Corp. Exploration was concentrated in the Beaver Lake Mountains, Star, and San Francisco districts, and in the Blue Mountain area. Targeted minerals included gold, silver, copper, lead, and zinc. Other exploration areas in the State included the Tintic, Bromide Basin, Marysvale, Lisbon and West Desert areas.

Several discoveries were announced representing both extensions of known mineralization and new discoveries. In the Beaver Lake-Rocky Range area, Nevada Star Resources drilled eight widely spaced holes in the pediment west of the Copper Ranch Mine and south of the OK Mine. Six of the eight holes penetrated significant copper intercepts and followup drilling on closer spacing is planned for 2001. In the East Tintic area, Chief Consolidated Mining Co., through its subsidiary Chief Gold Mines, discovered a highgrade ore body at depths of 180-215 meters (m) approximately 365 m south of the Trixie shaft. Drilling blocked out ore reserves of 64,000 t that averaged 23.3 grams per metric ton (g/t) gold and 156 g/t silver after cutting all gold assays to 31 g/t. The ore body represents an upper extension of the 75-85 oreshoot that had been previously mined by Kennecott and Sunshine. In the Lisbon Valley area, Summo Minerals Corp. drilled out the Centennial Southeast Extension ore body. The ore body is 90 to 240 m wide and extends over 670 m southeast of the designed southern high wall of the Centennial pit. The ore zone averaged 14 m of 0.68% copper and is still open to the southeast.

The value of mineral production is expected to remain relatively high in 2001, primarily due to increased production, but the increased volume will be offset by flat to declining base- and precious-metal prices due to the economic slowdown that began in the second half of 2000. Operator surveys indicate that in 2001 changes in metal production will be mixed with an increase in copper and a decrease in magnesium and molybdenum; industrial-minerals production should remain

relatively high, although a reduced demand for sand and gravel and cement may result in an overall lower total value; and precious-metal production will be mixed with a decrease in gold partially offset by an increase in silver. Exploration for both base and precious metals is expected to remain relatively low.

Reference Cited

Rio Tinto Ltd., 2001, 2000 Rio Tinto data book: London, Rio Tinto Ltd., 56 p.

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

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	1998		1999 r/		2000 p/		
	Quantity	Value	Quantity	Value	Quantity	Value	
Beryllium concentrates	metric tons	6,080	7	5,070	6	6,380	7
Clays, common		298	4,760	327	4,600	327	4,600
Gemstones		NA	W	NA	1,040	NA	849
Salt		1,770	68,100	1,890	92,000	2,100	108,000
Sand and gravel, construction		46,300	140,000	39,500	125,000	31,400	100,000
Stone, crushed		6,970 r/	35,900 r/	8,780	45,300	8,000	42,200
Combined values of cement (portland), clays (bentonite), copper, gold, gypsum (crude), helium (Grade-A), lime, magnesium compounds, magnesium metal, mercury (1998), molybdenum concentrates, perlite (crude), phosphate rock, potash, silver, dimension stone (1999-2000), and withheld value indicated by symbol W							
		XX	1,090,000	XX	1,020,000	XX	1,200,000
Total		XX	1,340,000	XX	1,290,000	XX	1,450,000

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

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

2/ Data are rounded to no more than three significant digits; may not add to totals shown.

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

Kind	1998				1999			
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone 2/	12 r/	2,930 r/	\$17,300 r/	\$5.90 r/	18	5,000	\$31,100	\$6.23
Dolomite	4 r/	3,420 r/	15,300 r/	4.49 r/	3	W	W	W
Sandstone	2	W	W	W	2	W	W	W
Quartzite	2	W	W	W	2	W	W	W
Volcanic cinder and scoria	3	W	W	W	4	W	W	W
Miscellaneous stone	6 r/	241	1,170	4.84 r/	6	327	1,490	4.56
Total or average	XX	6,970 r/	35,900 r/	5.15 r/	XX	8,780	45,300	5.15

r/ Revised. W Withheld to avoid disclosing company proprietary data; included in "Total." XX Not applicable.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Includes "limestone-dolomite," reported with no distinction between the two.

TABLE 3
 UTAH: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1999, BY USE 1/ 2/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Construction:			
Coarse aggregate (+ 1 1/2 inch):			
Riprap and jetty stone	72	\$592	\$8.22
Filter stone	7	23	3.29
Coarse aggregate, graded:			
Bituminous aggregate, coarse	W	W	W
Railroad ballast	W	W	W
Other graded coarse aggregate	940	4,370	4.64
Fine aggregate (-3/8 inch):			
Stone sand, concrete	W	W	W
Stone sand, bituminous mix or seal	13	45	3.46
Screening, undesignated	W	W	W
Other fine aggregate	430	1,390	3.22
Coarse and fine aggregates:			
Graded road base or subbase	751	1,900	2.53
Unpaved road surfacing	15	32	2.13
Terrazzo and exposed aggregate	W	W	W
Crusher run or fill or waste	W	W	W
Other coarse and fine aggregate	922	3,260	3.54
Other construction materials	(3/)	(3/)	(3/)
Agricultural:			
Agricultural limestone	W	W	W
Poultry grit and mineral food	W	W	W
Other agricultural uses	36	564	15.67
Chemical and metallurgical:			
Cement manufacture	W	W	W
Lime manufacture	W	W	W
Dead-burned dolomite manufacture	(3/)	(3/)	(3/)
Flux stone	W	W	W
Sulfur oxide removal	W	W	W
Other chemical and metallurgical	3,160	15,000	4.75
Unspecified: 4/			
Reported	1,740	14,000	8.06
Estimated	590	3,700	6.21
Total or average	8,780	45,300	5.15

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

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

2/ Includes dolomite, limestone, limestone-dolomite, miscellaneous stone, quartzite, sandstone, and volcanic cinder and scoria.

3/ Withheld to avoid disclosing company proprietary data; included in "Total."

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

TABLE 4
UTAH: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 1999, BY USE AND DISTRICT 1/

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3		Unspecified districts	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Construction:								
Coarse aggregate (+1 1/2 inch) 2/	--	--	W	W	W	W	--	--
Coarse aggregate, graded 3/	W	W	W	W	--	--	--	--
Fine aggregate (-3/8 inch) 4/	W	W	W	W	--	--	--	--
Coarse and fine aggregate 5/	W	W	1,640	4,730	W	W	--	--
Other construction materials	--	--	W	W	--	--	--	--
Agricultural 6/	W	W	W	W	--	--	--	--
Chemical and metallurgical 7/	2,450	8,650	W	W	W	W	--	--
Unspecified: 8/								
Reported	33	187	W	W	W	W	99	548
Estimated	150	670	440	3,000	--	--	--	--
Total	3,140	13,000	5,420	30,700	124	1,040	99	548

W Withheld to avoid disclosing company proprietary data; included in "Total." -- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Includes filter stone and riprap and jetty stone.

3/ Includes bituminous aggregate (coarse), railroad ballast, and other graded coarse aggregate.

4/ Includes screening (undesignated), stone sand (bituminous mix or seal), stone sand (concrete), and other fine aggregate.

5/ Includes crusher run (select material or fill), graded road base or subbase, terrazzo and exposed aggregate, unpaved road surfacing, and other coarse and fine aggregate.

6/ Includes agricultural limestone, poultry grit and mineral food, and other agricultural uses.

7/ Includes cement manufacture, dead-burned dolomite manufacture, flux stone, lime manufacture, and sulfur oxide removal.

8/ Reported and estimated production without a breakdown by end use.

TABLE 5
UTAH: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1999,
BY MAJOR USE CATEGORY 1/

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	3,110	\$13,500	\$4.34
Plaster and gunite sands	65	258	3.97
Asphaltic concrete aggregates and other bituminous mixtures	2,230	9,590	4.29
Road base and coverings	4,690	16,000	3.41
Road stabilization (cement)	29	48	1.66
Fill	3,930	7,400	1.89
Snow and ice control	18	31	1.72
Filtration	4	15	3.75
Other miscellaneous uses	43	236	5.49
Unspecified: 2/			
Reported	10,900	35,300	3.25
Estimated	15,000	43,000	2.87
Total or average	39,500	125,000	3.17

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Reported and estimated production without a breakdown by end use.

TABLE 6
 UTAH: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 1999,
 BY USE AND DISTRICT 1/

(Thousand metric tons and thousand dollars)

Use	District 1		District 2	
	Quantity	Value	Quantity	Value
Concrete aggregate (including concrete sand) 2/	688	2,850	2,110	8,280
Asphaltic concrete aggregates and road base materials	1,430	4,510	3,740	14,100
Road stabilization (cement)	--	--	--	--
Fill	178	433	3,040	4,870
Snow and ice control	19	31	--	--
Filtration	--	--	--	--
Other miscellaneous uses	13	106	29	130
Unspecified: 3/				
Reported	1,460	4,930	7,490	23,500
Estimated	1,400	5,200	11,000	32,000
Total	5,190	18,000	27,800	83,400
	District 3		Unspecified districts	
	Quantity	Value	Quantity	Value
Concrete aggregate (including concrete sand) 2/	380	2,630	--	--
Asphaltic concrete aggregates and road base materials	1,080	4,380	678	2,560
Road stabilization (cement)	--	--	29	48
Fill	705	2,100	--	--
Snow and ice control	--	--	--	--
Filtration	4	15	--	--
Other miscellaneous uses	--	--	--	--
Unspecified: 3/				
Reported	1,670	6,380	238	393
Estimated	1,700	5,300	--	--
Total	5,570	20,800	944	3,000

-- Zero.

1/ Data are rounded to no more than three significant digits; may not add to totals shown.

2/ Includes plaster and gunite sands.

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