



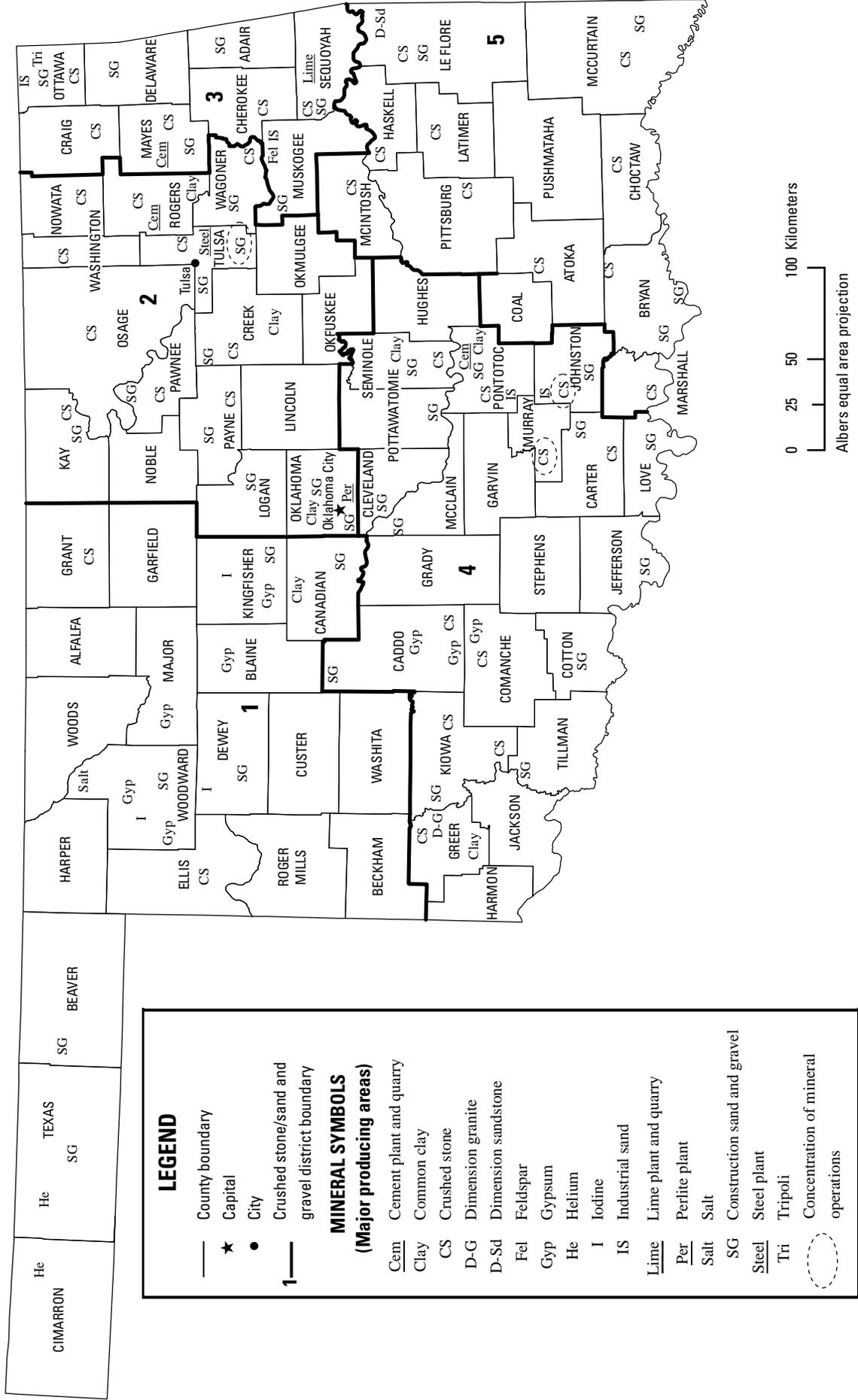
# 2007 Minerals Yearbook

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OKLAHOMA [ADVANCE RELEASE]

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# OKLAHOMA



Source: Oklahoma Geological Survey/U.S. Geological Survey (2007).

# THE MINERAL INDUSTRY OF OKLAHOMA

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

In 2007, Oklahoma's nonfuel raw mineral production<sup>1</sup> was valued at \$731 million, based upon annual U.S. Geological Survey (USGS) data. This was a \$41 million, or nearly 6%, increase from the State's total nonfuel mineral value for 2006, which then had increased by \$74 million, or by 12%, from that of 2005. The State increased to 31st from 32d in rank among the 50 States in total nonfuel mineral production value, accounting for more than 1% of the U.S. total value.

In 2007, crushed stone continued to be Oklahoma's leading nonfuel mineral commodity, based upon value, accounting for slightly more than 40% of the State's total nonfuel mineral production value. Crushed stone was followed by cement (portland and masonry), construction sand and gravel, iodine, industrial sand and gravel, and gypsum (descending order of value). The combined values of three of Oklahoma's four major construction materials—crushed stone, construction sand and gravel, and gypsum (descending order of value)—accounted for nearly 57% of the State's total value. (Data for portland cement were withheld—company proprietary data.)

Most of Oklahoma's increase in value in 2007 resulted from increases in the values, in descending order of change, of crushed stone, up by \$36 million, and Grade-A helium (withheld—company proprietary data). Increases of somewhat more than \$4 million each took place in construction sand and gravel and industrial sand and gravel. Smaller yet significant increases in value also took place in lime, iodine, and salt. The unit values of each of these nonfuel mineral commodities also increased, except for that of crude iodine, which was unchanged. The largest decreases in value took place in masonry cement, portland cement, and crude gypsum.

Oklahoma's mines exclusively produced industrial minerals; no metals were mined in the State. In 2007, Oklahoma continued to be the only State that produced iodine and it continued to be first in the quantities of crude gypsum produced. The State also remained 2d of 4 States that produce tripoli and 4th in the production of feldspar, but decreased to 6th from 5th in industrial sand and gravel production, to 7th from 6th in common clays, and to a tie for 10th from 10th in the production of masonry cement. Additionally, the State continued to be a significant producer of crushed stone, portland cement, construction sand and gravel, and gemstones (gemstones based upon value) (listed by descending order of value).

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<sup>1</sup>The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending upon the 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 2007 USGS mineral production data published in this chapter are those available as of June 2009. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—can be retrieved over the Internet at URL <http://minerals.usgs.gov/minerals>.

The narrative information that follows was provided by the Oklahoma Geological Survey<sup>2</sup> (OGS). Production and other data in the text that follow are those reported by the OGS based upon that agency's own surveys and estimates.

## Overview and Employment

The Oklahoma Department of Mines recorded that 377 mine operators produced nonfuel minerals from 442 mines in the State in 2007; however, 588 mining permitted sites were on file, up from 549 in 2006. Most of the producing mines were open pit mines. Exceptions were brine wells from which iodine and salt were produced, natural gas wells from which Grade-A helium was produced, and one underground limestone mine.

The downturn in home construction had a corresponding downturn, primarily in construction materials production including that of crushed stone for aggregates, construction sand and gravel, cement (portland and masonry), common clay for brick manufacture, and gypsum used in portland cement and wallboard manufacture.

Nevertheless, there was an increase of nearly 2,300 employees in Oklahoma's nonfuel mineral mining industry from that of 2006. In 2007, the industry directly employed 33,980 persons, up from 31,684 persons in 2006; these figures exclude employees of iodine and helium producers.

## Commodity Review

### *Industrial Minerals*

**Concrete and Sand and Gravel, Construction.**—Boral Ltd. of Sydney, Australia, acquired the assets of Oklahoma City's second largest ready mixed concrete and sand producer, Shwarz Ready Mix Inc. and Davis Arbuckle Materials for a total of \$80 million. Schwarz had an annual concrete production of 573,000 cubic meters (750,000 cubic yards); Davis Arbuckle Materials had 1.45 million metric tons (1.6 million short tons) of stone aggregate production. The Schwarz acquisition included 18 batch plants (base plant in Yukon just west of Oklahoma City), including a fleet of 160 mixers and tankers, and five sand deposits, most of which surrounded Oklahoma City. Also included in the deal was acquisition of the Davis Arbuckle Material limestone quarry in Davis, OK, with aggregate reserves projected to be for more than 30 years.

The HeidelbergCement AG takeover of Hanson PLC was announced on May 14. As a result, two Hanson operations in

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<sup>2</sup>Stanley T. Krukowski, Industrial Minerals Geologist IV and Chief, Industrial Minerals Unit, Geologic Resources Section of the Oklahoma Geological Survey, authored the text of the State mineral industry information provided by that agency.

the State—the Hanson Pipe & Precast plant in Oklahoma City and the Hanson Aggregates quarry in Davis—became part of the HeidelbergCement Group under the USA subsidiary of Lehigh Cement Co., LLC.

In 2007, Dolese Bros. Co. opened its newest operation, a sand dredging and production plant, on the Canadian River along State Route 4 about 8 kilometers (km) (5 miles) south of Mustang, OK. The Canadian River derives its sediment load mostly from Jurassic Age through Quaternary Age sandstones and finer-grained rocks in Oklahoma, New Mexico, and Texas. The plant produced various types of sand and gravel, including, but are not restricted to, concrete sand, fill sand, pea gravel, and three-quarter-inch gravel. The production schedule operated at a 545-metric-ton-per-hour rate (600-short-ton-per-hour).

The Mustang Sand Plant's entrance road and plant area were paved with return concrete from Dolese Bros.' concrete batch plants. Plant structure and conveyors were designed and constructed by Plant Fabricators Inc. out of Floresville, TX. Electrical systems were designed and built by Applied Controls Technology of Texarkana, AR. Screens were from Diester Machine Co. of Fort Wayne, IN. All new washing equipment was from Eagle Iron Works of Des Moines, IA, including classifying tanks, blade mills, screws, and log washer. The dredge suction head was 36 centimeters (cm) by 30 cm (14 inches by 12 inches) with a 21-meter (m) (70-foot) ladder. The sand section consisted of two 1.5-m by nearly 5-m (5-foot by 16-foot) horizontal screens; two 3.7-m by 14.6-m (12-inch by 48-inch) classifying tanks; two 0.9-m by 5.5-m (36-inch by 18-inch) blade mills, and two 1.7-m by 10.7-m (66-inch by 35-foot) double screws. The gravel section had one 0.9-m by 9-m (36-inch by 30-foot) log washer; and one 1.5-m by 3.7-m (5-foot by 12-foot) horizontal screen.

On November 20, Holcim affiliate, Holcim Participations (US) Inc., announced it had agreed to purchase a significant minority stake in Lattimore Materials Co., L.P. of McKinney, TX. Lattimore produced ready mixed concrete and aggregate in north Texas and southern Oklahoma. The Lattimore management team continued to manage the company and oversee its operations; the company operated two sand and gravel dredging operations and one crushed stone quarry in southern Oklahoma.

**Sand and Gravel, Industrial.**—In the summer, U.S. Silica Co. (USS) was acquired by CCMP Capital Advisors, LLC, which then sold USS to Harvest Partners, LLC, a New York-based private equity investment firm that specializes in management buyouts and growth financings of middle-market companies. Harvest Partners announced on October 23 that it had sold USS to an affiliate of Harbinger Capital Partners Master Fund I, Ltd. and Harbinger Capital Partners Special Situations Fund, L.P. (Harbinger). Then Harbinger proposed merging USS with General Chemical Industrial Products, Inc. (a producer of soda ash), another company owned by Harbinger; however, that did not come to be. The U.S. Silica Mill Creek plant in south-central Oklahoma continued to do business with

no apparent changes in its operation even with all the changes in ownership.

## Legislation and Government Actions

In 2007, the Tulsa County Board of Adjustment, by a 5–0 vote, approved a special exception to the zoning code for a new sand and gravel operation in Bixby, OK. The vote allowed Holliday Sand and Gravel Co. to develop a new proposed operation along the Arkansas River, the completion of which was planned to be by the fall of 2008. The new plant was needed to replace an older Holliday plant that was nearly depleted of its reserves. Included as conditions of the Board's approval were 1) prescribed limits on the plant's hours of operation, and 2) a \$250,000 bond, which Holliday voluntarily had offered, to cover the cost of any problems that could result from the company doing business at its new location.

During the winter months, Oklahoma municipal and county road crews spread sand and gravel for traction on icy roads, but the sand and gravel left on thoroughfares after the ice melts had to be removed and disposed safely. The City of Tulsa developed a partnership with American Environmental Landfill and Keystone Sand and Gravel Co., both of Sand Springs, OK. Keystone cleaned and screened sand for reuse while sand mixed with other debris was discarded at the landfill. The City of Tulsa reduced the cost of disposal and saved on the purchase of sand for future winter road conditions.

As part of a \$7.9 million grant program for health and safety training, the U.S. Department of Labor's Mine Safety and Health Administration (MSHA) announced that Oklahoma's share of the grant would be slightly more than \$97,600 for fiscal year 2007. The grant was administered by the State's mine inspector's office under the direction of the Oklahoma Mining Commission.

**Government and Industry Awards.**—At the end of 2006, the "Sentinels of Safety" awards for 2005 were announced by the MSHA and the National Mining Association, which jointly sponsored the program. The award for occupational safety, based on the number of hours without a lost-time injury, is the oldest award of its kind, first announced by President Herbert Hoover in 1925. T & M Sand & Gravel, Inc. of Gore, OK, won for 10,084 such hours in the Small Bank or Pit Group. In the Small Dredge Group, two companies received awards, Dolese Bros. Co. Guthrie Sand Plant in Guthrie, OK, won for 11,278 hours and the Schwarz Sand, L.L.C. Newcastle #1 plant in Norman, OK, won for 11,266 hours.

In 2007, National Stone, Sand & Gravel Association (NSSGA) announced its About Face Award winners. Created in 1975, the About Face Program, which is NSSGA's oldest award program, recognizes and rewards aggregate producers that have made constructive and positive efforts to enhance the aesthetic appearance of their operations. The Davis Quarry (Southwest Region) of Hanson Aggregates in Davis, OK, won a Showplace About Face Award.

TABLE 1  
NONFUEL RAW MINERAL PRODUCTION IN OKLAHOMA<sup>1,2</sup>

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral	2005		2006		2007	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays, common	903	2,520	1,180	4,700	1,050	4,060
Gemstones, natural	NA	43	NA	106	NA	106
Gypsum, crude	2,340 <sup>r</sup>	16,400 <sup>r</sup>	3,420 <sup>r</sup>	30,200 <sup>r</sup>	3,410	26,100
Iodine, crude	metric tons	1,570	W	W	W	W
Sand and gravel:						
Construction	13,300	65,000	17,000	91,900	16,700	96,200
Industrial	1,480	33,500	1,640	40,400	1,710	44,600
Stone:						
Crushed	47,300	269,000	43,800 <sup>r</sup>	258,000 <sup>r</sup>	45,800	294,000
Dimension	3	501	3	502	17	2,100
Tripoli	metric tons	30,600	18,400	1,890	40,600	1,600
Combined values of cement, feldspar, helium (Grade-A), lime, salt, and values indicated by symbol W	XX	227,000	XX	263,000	XX	262,000
Total	XX	616,000 <sup>r</sup>	XX	690,000 <sup>r</sup>	XX	731,000

<sup>r</sup>Revised. NA Not available. W Withheld to avoid disclosing company proprietary data. Withheld Values included in "Combined value" data.  
XX Not applicable.

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

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

TABLE 2  
OKLAHOMA: CRUSHED STONE SOLD OR USED, BY TYPE<sup>1</sup>

Type	2006			2007		
	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Number of quarries	Quantity (thousand metric tons)	Value (thousands)
Limestone <sup>2</sup>	46 <sup>r</sup>	38,100 <sup>r</sup>	\$225,000 <sup>r</sup>	50	39,600	\$253,000
Granite	4	2,840	16,600	4	3,100	20,200
Sandstone and quartzite	5	850	5,050	5	899	7,410
Miscellaneous stone	14 <sup>r</sup>	2,020 <sup>r</sup>	11,500 <sup>r</sup>	13	2,170	13,300
Total	XX	43,800 <sup>r</sup>	258,000 <sup>r</sup>	XX	45,800	294,000

<sup>r</sup>Revised. XX Not applicable.

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

<sup>2</sup>Includes limestone-dolomite reported with no distinction between the two.

TABLE 3  
OKLAHOMA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2007, BY USE<sup>1</sup>

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch):		
Macadam	W	W
Riprap and jetty stone	144	2,700
Filter stone	239	1,170
Other coarse aggregate	1,580	12,700
Coarse aggregate, graded:		
Concrete aggregate, coarse	3,880	31,400
Bituminous aggregate, coarse	103	860
Bituminous surface-treatment aggregate	633	5,100
Railroad ballast	W	W
Other graded coarse aggregate	302	2,240
Fine aggregate (-¾ inch):		
Stone sand, bituminous mix or seal	W	W
Screening, undesignated	573	2,850
Other fine aggregate	648	2,970
Coarse and fine aggregates:		
Graded road base or subbase	1,680	11,500
Unpaved road surfacing	66	487
Crusher run or fill or waste	1,880	12,400
Other coarse and fine aggregates	766	4,180
Agricultural, limestone	104	529
Chemical and metallurgical, cement manufacture	2,810	8,580
Unspecified: <sup>2</sup>		
Reported	24,000	153,000
Estimated	5,600	36,000
Total	45,800	294,000

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

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

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

TABLE 4  
OKLAHOMA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2007, BY USE AND DISTRICT<sup>1</sup>

(Thousand metric tons and thousand dollars)

Use	Districts 1 and 2 <sup>2</sup>		District 3		District 4	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1½ inch) <sup>3</sup>	W	W	W	W	W	W
Coarse aggregate, graded <sup>4</sup>	1,460	11,700	W	W	W	W
Fine aggregate (-¾ inch) <sup>5</sup>	423	2,070	W	W	W	W
Coarse and fine aggregate <sup>6</sup>	2,290	15,500	W	W	W	W
Agricultural <sup>7</sup>	10	43	W	W	--	--
Chemical and metallurgical <sup>8</sup>	W	W	W	W	W	W
Unspecified: <sup>9</sup>						
Reported	3,700	23,600	918	5,970	13,200	84,700
Estimated	826	5,400	733	4,800	476	3,100
Total	9,400	61,200	4,300	23,800	21,500	141,000
District 5						
	Quantity	Value				
Construction:						
Coarse aggregate (+1½ inch) <sup>3</sup>	40	1,640				
Coarse aggregate, graded <sup>4</sup>	W	W				
Fine aggregate (-¾ inch) <sup>5</sup>	W	W				
Coarse and fine aggregate <sup>6</sup>	607	4,140				
Agricultural <sup>7</sup>	W	W				
Chemical and metallurgical <sup>8</sup>	--	--				
Unspecified: <sup>9</sup>						
Reported	6,170	38,900				
Estimated	3,500	23,000				
Total	10,500	68,800				

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

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

<sup>2</sup>Districts 1 and 2 are combined to avoid disclosing company proprietary data.

<sup>3</sup>Includes filter stone, macadam, riprap and jetty stone, and other coarse aggregate.

<sup>4</sup>Includes bituminous aggregate (coarse), bituminous surface-treatment aggregate, concrete aggregate (coarse), railroad ballast, and other graded coarse aggregate.

<sup>5</sup>Includes screening (undesignated), stone sand (bituminous mix or seal), and other fine aggregate.

<sup>6</sup>Includes crusher run or fill or waste, graded road base or subbase, unpaved road surfacing, and other coarse and fine aggregates.

<sup>7</sup>Includes agricultural limestone.

<sup>8</sup>Includes cement manufacture.

<sup>9</sup>Reported and estimated production without a breakdown by end use.

TABLE 5  
OKLAHOMA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2007,  
BY MAJOR USE CATEGORY<sup>1</sup>

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregates and concrete products	3,600	\$21,900	\$6.08
Plaster and gunite sands	38	165	4.34
Asphaltic concrete aggregates and other bituminous mixtures	194	657	3.39
Road base and coverings	398	2,410	6.06
Fill	1,370	7,150	5.22
Other miscellaneous uses	1	5	5.00
Unspecified: <sup>2</sup>			
Reported	3,130	19,600	6.28
Estimated	7,900	44,000	5.59
Total or average	16,700	96,200	5.78

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

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

TABLE 6  
OKLAHOMA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2007,  
BY USE AND DISTRICT<sup>1</sup>

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregates and concrete products <sup>2</sup>	658	4,440	1,980	10,800	W	W
Asphaltic concrete aggregates and road base materials	350	2,160	138	522	W	W
Fill	162	267	817	6,160	W	W
Other miscellaneous uses	--	--	--	--	--	--
Unspecified: <sup>3</sup>						
Reported	508	3,410	744	4,920	758	4,180
Estimated	415	1,900	2,500	14,000	700	4,400
Total	2,090	12,200	6,170	36,500	8,920	4,990
	District 4		District 5			
	Quantity	Value	Quantity	Value		
Concrete aggregates and concrete products <sup>2</sup>	744	5,240	W	W		
Asphaltic concrete aggregates and road base materials	W	W	--	--		
Fill	W	W	W	W		
Other miscellaneous uses	1	5	--	--		
Unspecified: <sup>3</sup>						
Reported	748	4,550	371	2,600		
Estimated	3,090	16,600	1,300	7,200		
Total	4,990	27,300	1,930	11,300		

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

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

<sup>2</sup>Includes plaster and gunite sands.

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