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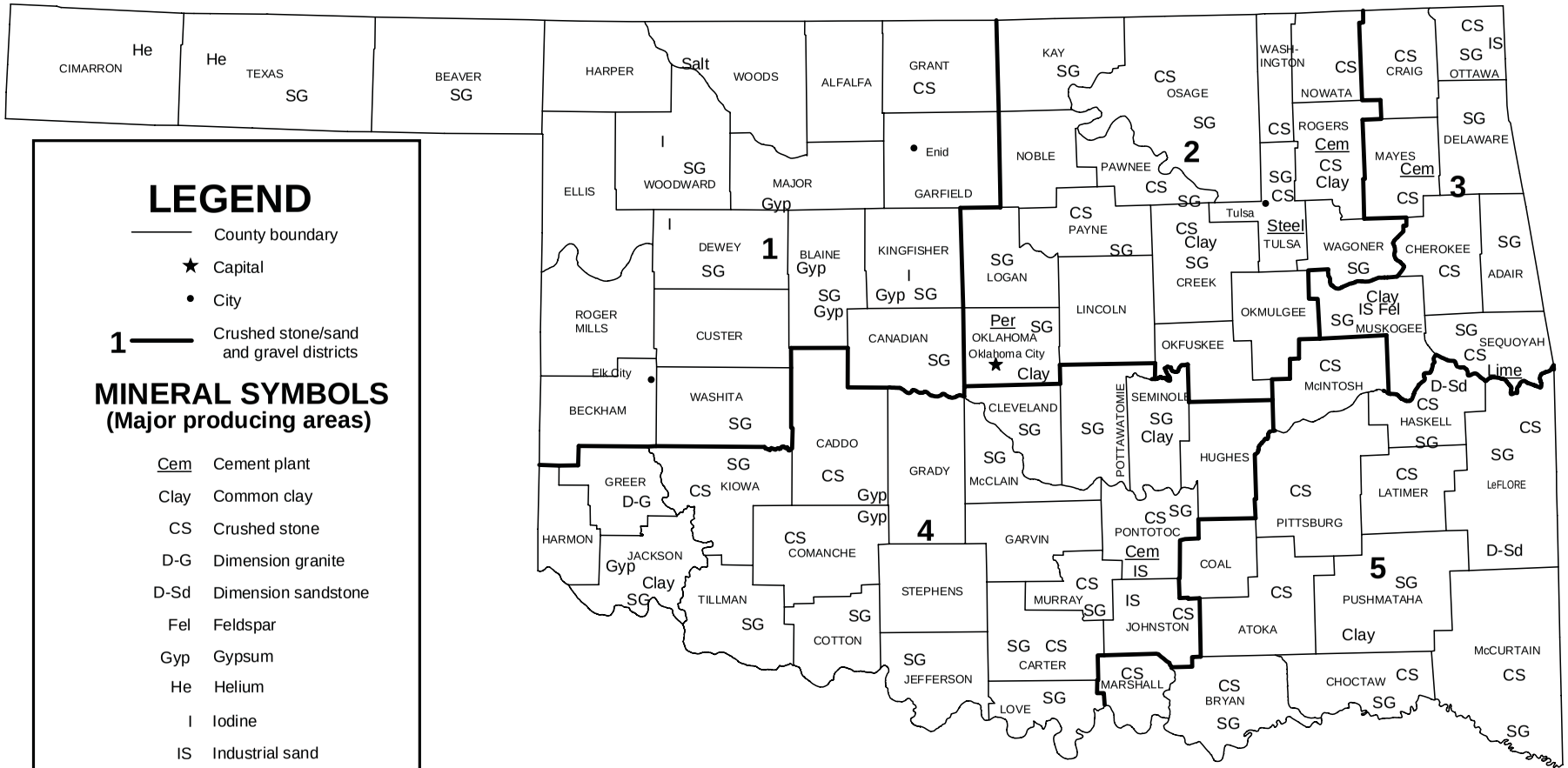
2005 Minerals Yearbook

OKLAHOMA

U.S. Department of the Interior
U.S. Geological Survey

May 2008

OKLAHOMA



LEGEND

- County boundary
- ★ Capital
- • City
- 1 Crushed stone/sand and gravel districts

MINERAL SYMBOLS
(Major producing areas)

Cem	Cement plant
Clay	Common clay
CS	Crushed stone
D-G	Dimension granite
D-Sd	Dimension sandstone
Fel	Feldspar
Gyp	Gypsum
He	Helium
I	Iodine
IS	Industrial sand
Lime	Lime plant
Per	Perlite plant
Salt	Salt
SG	Construction sand and gravel
Steel	Steel plant

Source: Oklahoma Geological Survey/U.S. Geological Survey (2005)

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 2005, Oklahoma's nonfuel raw mineral production was valued[1] at $606 million, based upon annual U.S. Geological Survey (USGS) data. This was an $87 million, or 16.8% increase from the State's total nonfuel mineral value of 2004, which then had increased by $49 million, or up 10.4% from 2003 to 2004. The State continued to be 31st in rank among the 50 States in total nonfuel mineral production value, of which Oklahoma accounted for more than 1% of the U.S. total value.

In 2005, crushed stone continued to be Oklahoma's leading nonfuel mineral commodity, based upon value, accounting for more than two-fifths of the State's total nonfuel mineral production value. Crushed stone was followed by cement (portland and masonry), construction sand and gravel, industrial sand and gravel, iodine, 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 56% of the State's total value. (Data for cement were withheld—company proprietary data.)

Most of Oklahoma's increase in value in 2005 resulted from increases in the values of crushed stone, cement (masonry and portland), construction sand and gravel, and iodine, which rose nearly $51 million, $16 million, $11.3 million, and nearly $8 million, respectively. The unit values of each of these nonfuel mineral commodities also increased significantly. With a 14% increase in production, the value of crushed stone rose nearly 25%; an 11% increase in the production of construction sand and gravel resulted in a 21% increase in the commodity's value, and a 39% increase in iodine production led to a nearly 50% increase in its total value for the year. Likewise, although cement production decreased slightly, the commodity's value increased significantly. Smaller yet significant increases also took place in the production and values of Grade-A helium, industrial sand and gravel, and salt. Although small in comparison, the value of gemstones rebounded somewhat in 2005. The commodity's value rose to $43,000 from an uncharacteristic low of $4,000 in 2004 (table 1). In recent years, the total value of gemstones production typically has ranged from $200,000 to more than $300,000, annually; a high of more than $600,000 was reached in 1996.

Relatively few mineral commodities had decreases in value, the largest of which was in that of crude gypsum, down $2.4 million, and that of dimension stone, the production of which was down more than 80%.

[1]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 2005 USGS mineral production data published in this chapter are those available as of December 2006. 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.

Oklahoma's mines exclusively produced industrial minerals; no metals were mined in the State. In 2005, Oklahoma continued to be the only State that produced iodine and was first in the quantities of crude gypsum produced. The State also remained second of 4 States that produce tripoli and fourth in the production of feldspar. Oklahoma rose to 7th from 8th in industrial sand and gravel production, and it decreased to 11th from 8th in the production of common clays. Additionally, the State continued to be a significant producer of crushed stone, portland cement, construction sand and gravel, and masonry cement (descending order of value).

The narrative information that follows was provided by the Oklahoma Geological Survey[2] (OGS). Production data in the text that follows are those reported by the OGS based upon that agency's own surveys and estimates. Data may differ from some production figures or other data as reported to the USGS.

Mining Employment

The Oklahoma Department of Mines (ODOM) recorded that more than 343 mine operators produced nonfuel minerals from 405 mines in the State of Oklahoma in 2005; 530 mining permitted sites were on file. Almost all were open pit mines, the exceptions being iodine and salt, each produced from brine wells, helium that was produced from natural gas wells, and one limestone operation that was produced from an underground mine. The State's nonfuel mining industry directly employed 29,287 persons in 2005, excluding employees of iodine and helium operators.

Commodity Review

Industrial Minerals

Common Clays.—Boral Bricks Inc. dismantled its long closed brick plant just west of Oklahoma City in Union City, Canadian County, in November 2004 after a 2-year exploration program at the site to identify additional onsite resources. Boral purchased the old plant in 1983 from Oklahoma Brick. The original plant was built in 1962 and was a less than state-of-the-art facility even at that time. In 1990, Boral shut down the plant as a result of the rising energy costs of the late 1980s, which also had a depressing effect on the building markets in the region (Brus, 2005§[3]); the plant had further deteriorated since 1990 (Goff-Parker, 2006§). Construction on the new brick manufacturing facility began in April 2005 and was completed later in the year. The cost of the facility, which was to be in excess of 15,300 square meters in area (165,000 square

[2]Stanley T. Krukowski, Industrial Minerals Geologist IV with the Oklahoma Geological Survey, authored the text of the State mineral industry information provided by that agency.

[3]References that include a section mark (§) are found in the Internet References Cited section.

feet), was estimated to be $34 million. Although output was to be mainly comprised of king size brick, Boral anticipated that it would be able to produce 100 million "standard brick equivalents" annually, thus increasing the company's brick manufacturing capacity by 6% in the United States. The plan for the plant was to supply bricks to customers in Arkansas, Oklahoma, and Texas, thus eliminating shipping costs from other Boral brick plants, which are located in the eastern United States. At full operation, the new Union City plant would have an estimated $2.5 million annual payroll, employing about 50 people to produce bricks in two production shifts, including truck drivers for raw materials and brick transport. Contract carriers (about 50-70 trucks per day) were to deliver bricks to customers in adjacent States. The plant produced its first brick on January 25, 2006 (Boral News, 2006§). Upon completion of a collection and 3-kilometer (2-mile) pipeline system, Boral expected to be able to meet about one-third of its natural gas fuel needs by firing the plant kilns in part with methane generated at the nearby landfill in Canadian County. The company also anticipated being able to use landfill gas as its entire fuel source in approximately 12 years from startup (Oklahoma Department of Environmental Quality, 2007§).

Crushed Stone.—Meridian Aggregates Co. (a wholly owned subsidiary of Martin-Marietta Materials, Inc.) continued developing an open pit mine, the North Troy project near Mill Creek, Johnston County, for aggregate production at the 280-hectare (ha) (700-acre) site. Local environmentalists opposed the company's efforts to dig a new water well on the property that would draw about 570 ha-meters (1,400 acre-feet) of water (about 1.7 million cubic meters or nearly 460 million U.S. gallons) annually. Water from the well would be used to wash the aggregates material extracted from the pit. The company set up a plan with the U.S. Department of the Interior's National Park Service and U.S. Fish and Wildlife Service to monitor the well and surrounding springs to determine if the aquifer would suffer any harmful effects. Approval for the water permit is in the jurisdiction of the Oklahoma Water Resources Board.

Dimension Stone.—Demand for dimension stone products in Oklahoma and in surrounding States continued to influence stone production, particularly in Haskell County and Leflore County. Growth in residential housing markets was responsible for a large portion of this development. Products most in demand included: building stone, field stone, decorative stone, natural stone landscaping products, and flagstone. Limestone, granite, sandstone (descending order of production) have been the principal resources mined in Oklahoma for these stone products. Dimension stone-specific legislation (specific definition) was passed by the State legislature in 2005.

Lime.—Oglebay Norton Co. announced on December 28 that its wholly owned subsidiary [Oglebay Norton Minerals (Lime) Co.] had completed the sale of Oglebay Norton Minerals (St. Clair) Co. to United States Lime and Minerals, Inc. for $14 million. The lime plant is near Marble City, Sequoyah County. Proceeds from the sale were to be reinvested in other Oglebay Norton Co. operations as well as to be used to pay down debt.

Legislation and Government Programs

The Oklahoma Legislature created a clarifying definition of "dimension stone quarry" in 2005, in part needed as a result of the increased interest in and demand for dimension stone in the State. Oklahoma Code of Law (OCL), Title 45, section 723, subsection 20, established the meaning as "a site where natural stone used as building material is excavated and the stones are selected, trimmed, or cut to specified shapes or sizes." Thereafter, the ODOM began classifying dimension stone as a new production category.

In other statutory changes, blasting permit holders were grandfathered into the appropriate standing mining legislation with regard to blasting within the limits of a municipality of 300,000 or more residences (OCL, Title 45, section 724, subparagraph N, subsection 2). In another statutory change, provision was made to allow the ODOM to levee civil fines against an operator found in violation of the provisions of the Mining Lands Reclamation Act or the rules of the Department (Title 45, section 729). Administrative changes include Oklahoma Administrative Code (OAC) 460:10-17-12 concerning the term of a mining permit, and OAC 460:10-19-5 that is concerned with permit renewals.

The OGS continued to be an active participant in the USGS-sponsored STATEMAP program; Oklahoma progress and related information may be accessed over the Internet at URL http://www.ogs.ou.edu/geolmapping/statemap/index.htm. STATEMAP is a component of the congressionally mandated National Cooperative Geologic Mapping Program (NCGMP), through which the USGS distributes Federal funds to support geologic mapping efforts through a competitive funding process. The NCGMP has three primary components: FEDMAP, which funds Federal geologic mapping projects, STATEMAP, which is a matching-funds grant program with State geological surveys, and EDMAP, a matching-funds grant program with universities that has a goal to train the next generation of geologic mappers. The State's maps that were previously published as open-file reports are now available through OGS Publication Sales as Oklahoma Geologic Quadrangle (OGQ) maps and may be accessed on the Internet at URL http://www.ogs.ou.edu/pubs.php. The following 7.5-minute quadrangles, which represent the Oklahoma City metropolitan area, were completed in 2005: Sageeyah (OGQ-56), Claremore (OGQ-57), Sperry (OGQ-61), and Collinsville (OGQ-62). Anadarko (OGQ-58), Altus (OGQ-59), and part of the Vernon (OGQ-60) 30- x 60-minute quadrangles also were completed in 2005. The focus of the geologic mapping project includes engineering, environmental, and natural resource issues.

The Oklahoma Aggregates Association (OKAA) conducted its inaugural Aggregates Day at the State Capitol, Oklahoma City, on February 10, 2005. More than 300 State legislators, their staff, and other State officials participated. Eight OKAA member companies and several State resource agencies used educational and informational exhibits to emphasize the importance of aggregates to the economy of Oklahoma, as well as to the high quality of life shared by its citizens.

In 2005, the Oklahoma Miner Training Institute (OMTI) held 239 classes for a total of nearly 33.800 classroom hours of instruction in which 84 coal miners and 4,590 metal/nonmetal miners were trained. The OMTI operates under the direction of the Oklahoma Mining Commission. The OMTI resides at Eastern Oklahoma State College in Wilburton and provides health classes and mine safety. Classes are held on a regular schedule at the college or at mine sites throughout the State for the convenience of miners and operators. All training provided by the OMTI is free of charge to mining companies who hold mining permits in Oklahoma.

Internet References Cited

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Brus, Brian, 2005 (January 11), Boral Bricks returns to Union City to restart manufacturing plant, accessed January 9, 2008, at URL http://findarticles.com/p/articles/mi_qn4182/is_20050111/ai_n10164388.

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Oklahoma Department of Environmental Quality, 2007, 2006 Annual Report—Land protection—Canadian County trash fuels brick factory, p. 80-81, accessed January 10, 2008, at URL http://www.deq.state.ok.us/pubs/ASD/ar2006/section3.pdf.

TABLE 1
NONFUEL RAW MINERAL PRODUCTION IN OKLAHOMA[1, 2]

(Thousand metric tons and thousand dollars unless otherwise specified)

Mineral		2003 Quantity	2003 Value	2004 Quantity	2004 Value	2005 Quantity	2005 Value
Clays, common		1,160	2,390	1,150	2,410	903	2,520
Gemstones		NA	197	NA	4	NA	43
Gypsum, crude		2,250	14,100	3,250	20,800	2,620	18,400
Iodine, crude	metric tons	1,090	15,900	1,130	15,900	1,570	23,700
Sand and gravel:							
Construction		11,000	48,500	12,000	53,700	13,300	65,000
Industrial		1,360	29,700	1,390	31,600	1,480	33,500
Stone:							
Crushed		40,100	193,000	39,800 r	206,000 r	45,400	257,000
Dimension		17	2,100	17	2,100	3	501
Tripoli	metric tons	10,600	1,960	32,100	2,120	30,600	1,950
Combined values of cement, feldspar, helium (Grade-A), lime, salt		XX	163,000	XX	183,000	XX	203,000
Total		XX	470,000	XX	519,000 r	XX	606,000

rRevised. NA Not available. 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
OKLAHOMA: CRUSHED STONE SOLD OR USED, BY KIND[1]

Kind	2004 Number of quarries	2004 Quantity (thousand metric tons)	2004 Value (thousands)	2005 Number of quarries	2005 Quantity (thousand metric tons)	2005 Value (thousands)
Limestone[2]	43	33,100 r	$166,000 r	43	38,500	$214,000
Granite	4	3,670	23,200	4	3,740	23,900
Sandstone and quartzite	6	2,620	15,100 r	5	2,530	16,600
Miscellaneous stone	2	424	2,090	3	583	3,110
Total	XX	39,800 r	206,000 r	XX	45,400	257,000

rRevised. 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
OKLAHOMA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2005, BY USE[1]

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch):		
Riprap and jetty stone	397	2,920
Filter stone	81	510
Other coarse aggregates	25	115
Total	503	3,550
Coarse aggregate, graded:		
Concrete aggregate, coarse	994	6,490
Bituminous aggregate, coarse	484	3,100
Bituminous surface-treatment aggregate	W	W
Railroad ballast	W	W
Other graded coarse aggregates	11,600	68,200
Total	13,200	78,300
Fine aggregate (-⅜ inch):		
Stone sand, concrete	W	W
Stone sand, bituminous mix or seal	W	W
Screening, undesignated	1,430	5,930
Other fine aggregates	73	516
Total	2,040	8,630
Coarse and fine aggregates:		
Graded road base or subbase	1,500	7,790
Unpaved road surfacing	140	678
Crusher run or fill or waste	5,990	27,500
Other coarse and fine aggregtates	2,810	12,400
Total	10,400	48,300
Other construction materials	1	5
Agricultural:		
Agricultural limestone	70	267
Poultry grit and mineral food	(2)	(2)
Chemical and metallurgical:		
Cement manufacture	(2)	(2)
Lime manufacture	(2)	(2)
Special, other fillers or extenders	(2)	(2)
Other miscellaneous uses and specified uses not listed	33	162
Unspecified:[3]		
Reported	11,400	72,300
Estimated	5,200	28,000
Total	16,600	100,000
Grand total	45,400	257,000

W Withheld to avoid disclosing company proprietary data; included in "Total."
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Withheld to avoid disclosing company proprietary data; included in "Grand total."
[3]Reported and estimated production without a breakdown by end use.

TABLE 4

OKLAHOMA: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2005, BY USE AND DISTRICT[1, 2]

(Thousand metric tons and thousand dollars)

Use	District 1 and 2		District 3		District 4	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1½ inch)[3]	127	1,230	W	W	W	W
Coarse aggregate, graded[4]	1,730	12,000	--	--	W	W
Fine aggregate (-⅜ inch)[5]	W	W	W	W	W	W
Coarse and fine aggregates[6]	4,740	23,700	W	W	W	W
Other construction materials	--	--	1	5	--	--
Agricultural[7]	W	W	W	W	--	--
Chemical and metallurgical[8]	W	W	W	W	--	--
Special[9]	--	--	W	W	--	--
Other miscellaneous uses and specified uses not listed	--	--	--	--	--	--
Unspecified:[10]						
Reported	1,930	10,300	1,460	7,810	4,650	30,500
Estimated	--	--	862	4,600	1,700	9,300
Total	10,100	53,000	4,390	29,500	22,400	124,000

	District 5	
	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch)[3]	W	W
Coarse aggregate, graded[4]	W	W
Fine aggregate (-⅜ inch)[5]	W	W
Coarse and fine aggregates[6]	1,120	5,380
Other construction materials	--	--
Agricultural[7]	W	W
Chemical and metallurgical[8]	--	--
Special[9]	--	--
Other miscellaneous uses and specified uses not listed	33	162
Unspecified:[10]		
Reported	3,380	23,700
Estimated	2,600	14,000
Total	8,500	51,000

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]Districts 1 and 2 are combined to avoid disclosing company proprietary data.

[3]Includes filter stone, riprap and jetty stone, and other coarse aggregates.

[4]Includes bituminous aggregate (coarse), bituminous surface-treatment aggregate, concrete aggregate (coarse), railroad ballast, and other graded coarse aggregates.

[5]Includes screening (undesignated), stone sand (bituminous mix or seal), stone sand (concrete), and other fine aggregates.

[6]Includes crusher run or fill or waste, graded road base or subbase, unpaved road surfacing, and other coarse and fine aggregates.

[7]Includes agricultural limestone and poultry grit and mineral food.

[8]Includes cement and lime manufacture.

[9]Includes other fillers or extenders.

[10]Reported and estimated production without a breakdown by end use.

TABLE 5
OKLAHOMA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2005,
BY MAJOR USE CATEGORY[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	4,440	$25,800	$5.81
Plaster and gunite sands	113	734	6.50
Concrete products (blocks, bricks, pipe, decorative, etc.)	97	422	4.35
Asphaltic concrete aggregates and other bituminous mixtures	297	994	3.35
Road base and coverings	456	1,330	2.92
Fill[2]	1,770	6,210	3.51
Unspecified:[3]			
Reported	2,430	11,900	4.89
Estimated	3,730	17,700	4.75
Total or average	13,300	65,000	4.88

[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes snow and ice control.
[3]Reported and estimated production without a breakdown by end use.

TABLE 6
OKLAHOMA: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2005,
BY USE AND DISTRICT[1, 2]

(Thousand metric tons and thousand dollars)

	District 1 and 4		Districts 2, 3, and 5	
Use	Quantity	Value	Quantity	Value
Concrete aggregates and concrete products[3]	1,790	10,900	2,860	16,000
Asphaltic concrete aggregates and road base materials	500	1,410	254	912
Fill[4]	995	2,280	774	3,930
Unspecified:[5]				
Reported	2,200	10,700	230	1,140
Estimated	1,870	8,870	1,860	8,830
Total	7,350	34,200	5,980	30,800

[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Districts 1 and 4, and 2, 3, and 5 are combined to avoid disclosing company proprietary data.
[3]Includes plaster and gunite sands.
[4]Includes snow and ice control.
[5]Reported and estimated production without a breakdown by end use.